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ABSTRACT

The purpose of this study was to collect a bank of data on the teaching of science that could serve as a basis of comparison for trend analysis. The information obtained in this survey provides a description of science teaching practices and selected science teacher characteristics in the United States. Comparisons with data to be obtained in future studies will help decision makers regarding changes taking place in programs, instruction, facilities, and teacher education. The data are organized according to eight regions of the country: Great Lakes, Farwest, New England, Mideast, Southwest, Rocky Mountains, Plains, and Southeast. A total of 276 variables were included in the data-gathering questionnaires. These variables are reported in one of the following six categories: school organization, scheduling, and enrollment variables; use of resources variables; science course variables; science course improvement project variables; teacher characteristics and background; and teaching practices, preferences, and concerns. The means, standard deviations, and number of responses for each of the variables for each of the regions were computed, and results are given for correlation and multiple regression analyses of selected variables. Both the principal's and the science teacher's questionnaire are included as appendices. (Author/MH)

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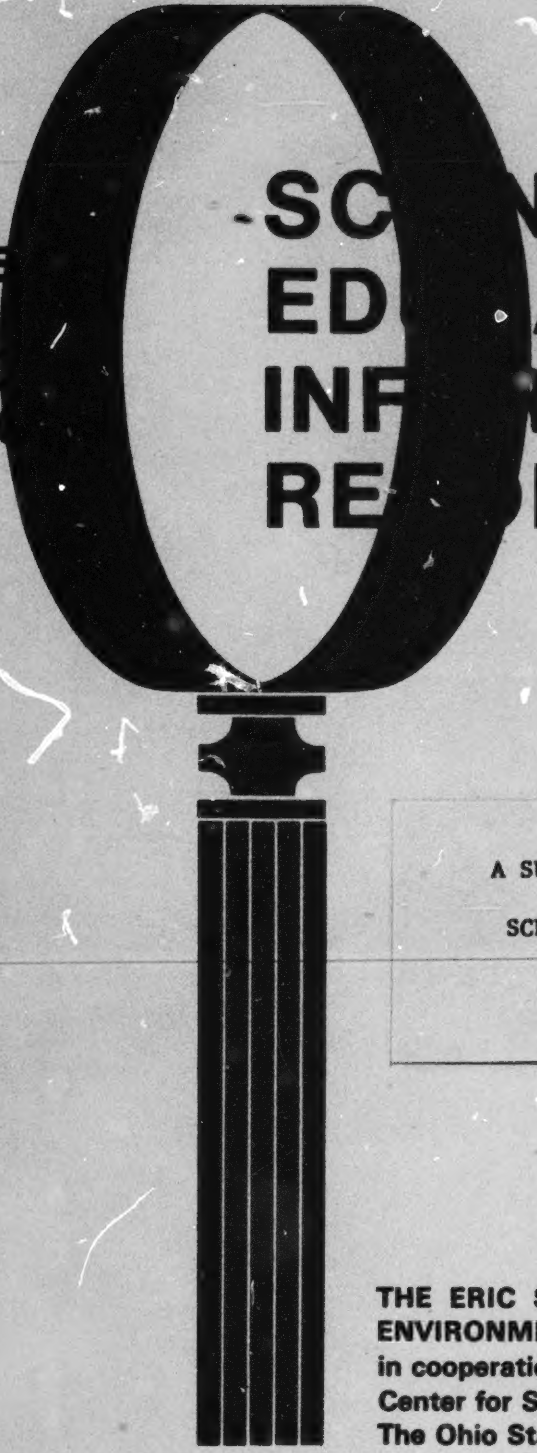

SCIENCE EDUCATION INFORMATION REPORT

A SURVEY OF SCIENCE TEACHING IN PUBLIC SCHOOLS OF THE UNITED STATES (1971)

VOLUME 2 - SECONDARY SCHOOLS

**THE ERIC SCIENCE, MATHEMATICS AND
ENVIRONMENTAL EDUCATION CLEARINGHOUSE
in cooperation with
Center for Science and Mathematics Education
The Ohio State University**

SE 021 379

SCIENCE EDUCATION REPORTS

A SURVEY OF SCIENCE TEACHING IN PUBLIC SCHOOLS OF THE UNITED STATES (1971)

VOLUME 2 - SECONDARY SCHOOLS

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1974

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Preface

The purpose of this study was to collect "bench mark" data on the teaching of science that could serve as a basis of comparison for trend analysis. The information obtained in this survey provides a description of science teaching practices and selected science teacher characteristics in the United States. Comparisons with data to be obtained in future studies will help decision makers regarding changes taking place in programs, instruction, facilities and teacher education.

This monograph provides results of correlation and multiple regression analyses of selected secondary school and teacher variables. It is a companion to Volume 1 which provides descriptive information on the teaching of secondary school science obtained in the survey. Both of these volumes utilize and consolidate regional data collected in individual doctoral studies by Chin (1971), Buckeridge (1973) and Baker (1973). A similar pair of monographs provides descriptive and correlation and multiple regression results regarding the teaching of elementary school science.

This trend analysis project will be continued by another national survey. We have used information obtained in the 1970-71 survey to answer many requests for information at ERIC/SMEAC and believe there is interest and need for similar information collected on a periodic basis.

The authors are grateful for assistance provided by James Kozlow and Edith Santana. The computer data analyses provided by Mr. Kozlow and Mrs. Santana provided considerable assistance in preparing the final report.

Robert W. Howe
Director
ERIC/SMEAC

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Section I

Introduction

A national survey of science teaching was conducted by the Faculty of Science and Mathematics Education at the Ohio State University during the 1970-71 school year. The purpose was to establish a data bank of information concerning science teaching in the public schools in the fifty states of the United States and the District of Columbia.

The survey was designed to collect data from a sample of public schools in all states of the United States. The data was organized by regions which were based on the divisions formulated in the Brown and Obourn study of 1963 (Chin, 1971). The regions included were: Great Lakes, Farwest, New England, Mideast, Southwest, Rocky Mountains, Plains, and Southeast.

The survey had a number of unique features. Sampling techniques were used which insured that the ratio of the enrollments of schools sampled per region to the total enrollment of schools sampled was the same as the ratio of the regional population enrollments to the total school population enrollments.

Sampling Procedures

Selection of Public Secondary Schools*

The method of obtaining the sample of public secondary schools involved the following steps:

1. The number of public secondary schools to be selected from each state and the District of Columbia was computed on the basis of the ratio of the State or District of Columbia total secondary school enrollment. Thus,

$$n_{state} = \frac{N_{state}\ (S)}{N_{total}\ (S)} \times N$$

where n_{state} = the number of public secondary schools to be sampled in the respective state

N_{state} (S) = secondary school enrollment in the state

N_{total} (S) = total U.S. secondary school enrollment

N = sample size = 6,398 public secondary schools.

---

* Buckeridge, Ellen C. A Survey of Science Teaching in the Public Secondary Schools of the New England, Mideast, and Southwest States of the United States, unpublished Ph.D. dissertation, The Ohio State University, 1973.

Example: State of Massachusetts

^{N}Massachusetts (S) = 460,609 secondary school students

^{N}total (s) = 17,543,239 secondary school students

$$\text{Hence, } {}^{n}\text{Massachusetts} = \frac{460{,}609}{17{,}543{,}239} \times 6{,}398$$

$$= 166 \text{ public secondary schools}$$

i.e., 166 public secondary schools were sampled from the population of public secondary schools in Massachusetts.

2. The unit population for each state was computed as follows:

$$\text{Unit population} = \frac{{}^{N}\text{state (E,S)}}{{}^{n}\text{state}}$$

where ^{N}state (E,S) = school enrollment (elementary and secondary) for the state.

Example: State of Massachusetts

^{N}Massachusetts (E,S) = 1,046,950 students

^{n}Massachusetts = 166 public secondary schools

$$\text{Hence, the unit population for Massachusetts} = \frac{1{,}046{,}950}{166}$$

$$= 6{,}301 \text{ students per public secondary school sample unit}$$

3. School districts in each state were first grouped by county. The total school enrollment (elementary and secondary) of all school districts in a county was computed. This figure was divided by the unit population for that state to determine the number of public secondary schools to be sampled from the county. An example is used with Berkshire County, Massachusetts.

Example: Berkshire County, Massachusetts

Total school enrollment in Berkshire County = 29,281. Unit population for Massachusetts = 6,301.

Number of public secondary schools sampled from the population of public secondary schools in Berkshire County, Massachusetts =

$$\frac{29{,}281}{6{,}301} = 4.6$$

4. If the total school enrollment in a county was less than one half that of the unit population, then the county was combined with one or more neighboring counties so as to equal to one, two or more times the unit population. The number of public secondary schools to be sampled from this group of counties was determined by dividing the combined school enrollment by the unit population. An example used with Duke, Nantucket and Barnstable Counties, Massachusetts follows.

Example: Combining Neighboring Counties - Duke, Nantucket, and Barnstable Counties, Massachusetts

Total school enrollment in Duke County = 832 students
Total school enrollment in Nantucket County = 791 students
Total school enrollment in Barnstable County = 20,987 students
Combined school enrollment in Duke, Nantucket, and Barnstable Counties = 22,610 students.

Number of public secondary schools sampled in Duke, Nantucket, and Barnstable Counties $= \frac{22,610}{6,301} = 4$ to nearest whole number.

5. In the case of large school districts within a county, the total school enrollment in each school district was divided by the unit population to determine the number of public secondary schools to be sampled from each district. An example is used with the Pittsfield Public School District in Berkshire County, Massachusetts.

Example: Pittsfield Public School District

Total school enrollment in the Pittsfield Public School District = 12,302 students.

Number of public secondary schools sampled from this school district

$$= \frac{12,302}{6,301} = 2 \text{ to the nearest whole number}$$

6. In the case of small school districts within a county, two or more neighboring districts were combined, and their total school enrollment was divided by the unit population to determine the number of public secondary schools sampled in the combined districts. An example is used with the Adams, Berkshire Hills, Central Berkshire, and Chesire School Districts in Berkshire County, Massachusetts.

Example: Combining School Districts - Adams, Berkshire Hills, Central Berkshire and Chesire, Berkshire County, Massachusetts

Total school enrollment in the Adams Schools District = 2,229 students
Total school enrollment in the Berkshire Hills School District = 1,118 students
Total school enrollment in the Central Berkshire School District = 819 students
Total school enrollment in the Chesire School District = 466 students
Combined school enrollment = 4,632 students.

Number of public secondary schools sampled from the Adams, Berkshire Hills, Central Berkshire, and Chesire School Districts

$$= \frac{4,632}{6,301} = 1 \text{ to the nearest whole number}$$

7. The individual public secondary schools were then randomly selected from an alphabetical listing of all public secondary schools in the selected school district or a combination of school districts. Tables of random numbers were used in this phase of the sampling. The principals of selected public secondary schools received the Principal's Questionnaire. The total number of schools selected from a state may deviate slightly from the identified number due to rounding off area populations.

Selection of Secondary Science Teachers

Stage 2 of the multi-stage random sampling technique involved the random selection of the science teacher within the selected schools. The principals were given specific directions indicating how the random numbers could be used to select the teacher from an alphabetical listing of the science teachers in their respective schools. (Chin, 1971).

Selection of Secondary Science Classes

Stage 3 was that stage in which a specific science class was chosen from the total number of classes taught by the preselected science teachers. They were directed to use random selection to determine one class from which they would give the data requested in the questionnaire. Specific directions were provided to assist the teacher in this selection. (Chin, 1971). (See Appendix A, Science Teacher Questionnaire, page

Questionnaires were sent to both the school principal and a science teacher on the staff so that relationships between organizational variables and teaching practices could be made. Two studies were conducted concurrently. One was at the secondary level and the companion study at the elementary level to provide K-12 data.

The purpose of the overall national survey was to obtain descriptive information concerning the practices, procedures, policies and conditions related to the teaching of science in the public schools of the United States as they existed during the 1970-71 school years. This report deals only with the secondary level data collected from the principals and the teachers of the schools and is a followup and extension of the descriptive report by Schlessinger, Howe, White, Chin, Baker, and Buckeridge (1973). Included is a discussion of the correctional analyses of the data derived from the Principal's Questionnaire and the Science Teacher Questionnaire.

Design of the Study

The population for this survey included all public secondary schools in the 50 states and the District of Columbia. Based on a sample of 10,000 public elementary schools in the companion survey of elementary school science teaching practices, the sample size for this survey was computed to be 6,398 public secondary schools. These sample sizes reflect the ratio of the total elementary school enrollment to the total secondary school enrollment in the population. The sample of 6,398 public secondary schools represents 25.2 percent of the public secondary schools in the United States. (Kahn & Hughes, 1969).

Figure 1 represents the geographic distribution of the public secondary schools to be sampled per state for the survey.

The states included in each of the regions are as follows:

Great Lakes:	Illinois, Indiana, Michigan, Ohio, Wisconsin.
Farwest:	Alaska, California, Hawaii, Nevada, Oregon, Washington.
New England:	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.
Mideast:	Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania.
Southwest:	Arizona, New Mexico, Oklahoma, Texas.
Rocky Mountains:	Colorado, Idaho, Montana, Utah, Wyoming.
Plains:	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.
Southeast:	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, West Virginia, Virginia.

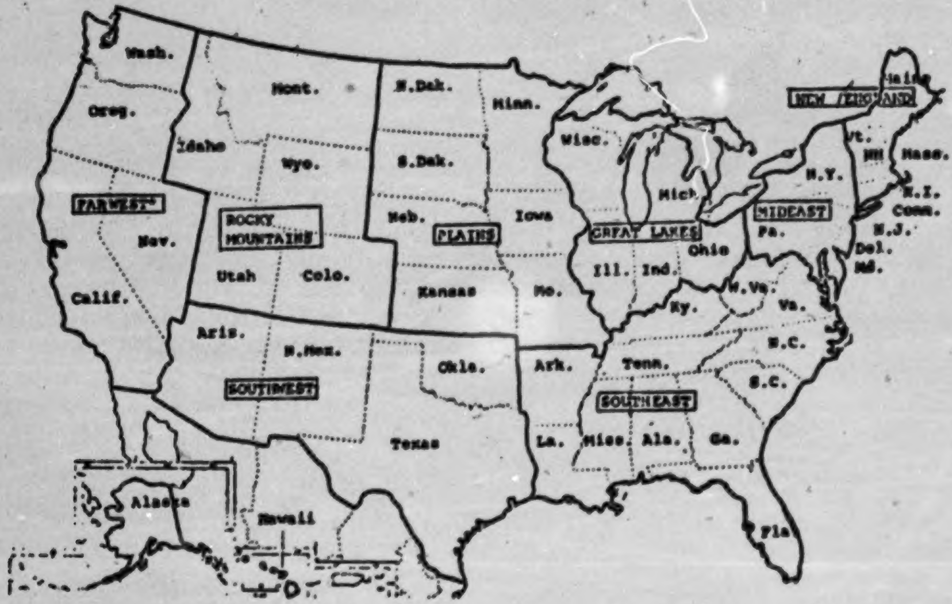
Wash.
Oreg.
Mont.
Idaho
Wyo.
N.Dak.
Minn.
S.Dak.
Wisc.
Mich.
NEW ENGLAND
Maine
Vt.
NH
Mass.
N.Y.
R.I.
Conn.
MIDEAST
N.J.
Pa.
Del.
Md.
FARWEST
Nev.
ROCKY MOUNTAINS
Neb.
PLAINS
Iowa
GREAT LAKES
Ohio
Ill.
Ind.
Utah
Colo.
Calif.
Kansas
Mo.
W.Va.
Ky.
Va.
Ariz.
N.Mex.
Okla.
Ark.
Tenn.
N.C.
S.C.
SOUTHWEST
SOUTHEAST
Texas
La.
Miss.
Ala.
Ga.
Alaska
Hawaii
Fla.

Figure 1. State Groupings

The actual number of schools and teachers selected for the sample was 6,298. The figure is less than the calculated figure because of the grouping procedures used in sampling. Counties or other units were grouped to get a large enough student population to warrant one or more schools being sampled in the area. This and the round off effect reduced the actual number of units to be sampled.

Communications were received from approximately 95 percent of the schools. These communications varied all the way from indicating they were not interested in filling out the questionnaires to returning the questionnaires completed. Completed questionnaires were received from 2,489 principals and 2,467 teachers and were used in the report by Schlessinger, et al. (1973).

This report includes correlational analyses and therefore it was necessary to have matching sets of teacher and principal responses. Since some principals responded in schools where the teacher did not and some teachers responded in schools were the principal did not the sample size for analysis was further reduced. The matching of teacher and principal responses resulted in 2,193 complete sets of data for the correlational analyses. This is 34.8% of the original sampling. The original sample, the correlation analysis sample, and the percent of the original sample included in correlation sample are reported in Table 1.

TABLE 1

FREQUENCY AND PERCENTAGE OF PRINCIPAL AND TEACHER QUESTIONNAIRE RESPONSES USED IN CORRELATION SAMPLE

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Schools Samples	1214	855	336	1228	588	201	471	1405	6298
Correlation Sample	459	314	130	435	182	85	225	363	2193
Percent	37.8	36.7	38.7	35.4	31.0	42.3	47.8	25.8	34.8

Effect of Non-response and Incomplete Questionnaires on Analysis

Several analyses were conducted to determine the possible effect of non-responses and the removal of questionnaires from the analyses.

Analyses were conducted to determine which schools did or did not respond and the possible impact of those schools on the analyses. The analyses were conducted in three ways: (1) determining whether non-responding schools differed from those that did respond regarding school size, school location, and type of school; (2) analyzing principal and teacher returns from schools with a single response to compare data from those with two responses; and (3) checking non-responding schools in detail in two states (Ohio and Oregon) and a sample of 30 other schools from other states.

Analyses of data by regions indicated no significant differences using X^2 (.05 level) between non-responders and responders on items checked. Analyses of non-responders in two states and a sample of 30 schools selected from other states indicated non-responders would have little if any impact on the regional data. Data for small states would change, but these changes would not have substantial impact on regional or national data.

Data-Gathering Instruments

The data were gathered by means of two structured questionnaires, the Principal's Questionnaire and the Science Teacher Questionnaire. These instruments are included in Appendix A. The Principal's Questionnaire was designed to provide data for all the science teachers and science classes in the school. The instrument included 26 items grouped into seven sections:

1. Screening Questions
2. School Organization and Scheduling
3. Grouping of Science Classes
4. Teaching Staff
5. Science Budget
6. Course Offerings
7. Miscellaneous

The Science Teacher Questionnaire was designed to provide information concerning specific characteristics of secondary school science teachers, the conditions under which they taught science, and the learning activities involved in their teaching of science. This instrument included 25 items grouped into six sections:

1. School Organization
2. Teacher Characteristics
3. Teaching Load
4. Special Science Facilities and Audio-Visual Aids
5. Science Teaching
6. Miscellaneous

Data Analysis

The means, standard deviations, and number of responses for each of the variables for each of the eight regions were computed. For the purposes of the correlational analysis, schools which did not have a particular grade level were deleted when considering the enrollment for grade levels which they did not have. For instance, a 9th through 12th grade high school was not included when correlations were computed relating 7th or 8th grade enrollments with other variables. A school of this type would be included when correlations were computed relating 9th, 10th, 11th, or 12th grade enrollments with other variables.

To investigate the influence of school size and school type (junior high, senior high, or combination) on the correlational relationships four stepwise multiple regression analyses were performed:

1) Analysis #1: All variables were allowed to enter in the order which added the most to the prediction equation.

2) Analysis #2: The Total Student Enrollment Variable was forced to enter first, thus partialling out its relation with the variable to be predicted. The remaining variables were then allowed to enter stepwise in the order which added the most to the prediction equation.

3) Analysis #3: School Type was forced to enter first followed by the stepwise analysis. School Type was composed of three dichotomous variables. They were:

    (a) schools including both junior and senior high school students (Type J-Sr).

    (b) schools including senior high school students only (Type-Sr).

    (c) schools including junior high school students only (Type-Jr).

4) Analysis #4: Both School Type and Total Student Enrollment were forced to enter and then the stepwise analysis followed.

Section II

Variables

The questionnaires were used to collect data on 276 variables overall. Not all of these variables were included in the correlational analyses. Some of the variables were nominal, some resulted in 75 to 100 percent of the subjects responding in the same manner, some were not of particular interest and some resulted in ambiguous responses due to misinterpretation by the respondents. Some of the variables were combined by transgeneration to produce new variables. The number of variables resulting from these processes was 89. These variables are listed in Table 2.

These variables have been divided into six categories for the purpose of reporting. These categories are as follows:

A. School organization, scheduling and enrollment variables (1, 6-17, 34, 35).

B. Use of resources variables (2-5, 19-24, 43-45).

C. Science course variables (46, 84-88).

D. Science Course Improvement Project variables (18, 29-33).

E. Teacher characteristics and background (25-28, 36-42, 73-83, 89).

F. Teaching practices, preferences and concerns (47-72).

The 26 variables in Table 2 which are preceded by a # symbol were used as dependent or criterion variables in the following analyses. They include Science Course Improvement Project usage variables, teacher self-improvement activities, teaching practice preferences of teachers and teacher satisfaction with career. The means, standard deviations, and number of responses for each of these variables for each of the eight regions are given in Tables 3-8.

TABLE 2

NAMES, ABBREVIATIONS AND CODINGS FOR VARIABLES

No.	Abbreviation	Name	Code
# 1	Grouping	Homogeneous Grouping in Science Classes	2 = yes, 1 = no
2	Teach Buy Eq	Teacher Purchase of Science Equipment and Supplies	2 = yes, 1 = no
3	NDEA Eq	Use of NDEA Funds for Science Equipment	2 = yes, 1 = no
4	ESEA Eq	Use of ESEA Funds for Science Equipment	2 = yes, 1 = no
5	NDEA Remod	Use of NDEA Funds for Remodelling Science Facilities	2 = yes, 1 = no
6	Roll GS	Enrollment for General Science	Number
7	Roll Life	Enrollment for Life Science	Number
8	Roll Bio	Enrollment for Biology	Number
9	Roll Chem	Enrollment for Chemistry	Number
10	Roll Physics	Enrollment for Physics	Number
11	Roll Earth	Enrollment for Earth Science	Number
12	Roll Geol	Enrollment for Geology	Number
13	Roll Phy Sci	Enrollment for Physical Science	Number
14	Roll Health	Enrollment for Health Science	Number
15	Type J-Sr	School Type Junior-Senior High	1 = yes, 0 = no
16	Type Sr	School Type Senior High	1 = yes, 0 = no
17	Type Jr	School Type Junior High	1 = yes, 0 = no
#18	SCIP Use	Use of Science Course Improvement Projects	2 = yes, 1 = no
19	Sci Club	Science Club	2 = yes, 1 = no
20	Sci Fair	Science Fair Participation	2 = yes, 1 = no
21	City/Count Sup	Use of City or County Supervisors	2 = yes, 1 = no
22	Local Cons	Use of Local Consultants	2 = yes, 1 = no
23	Sci Teach Wksp	Science Teaching Methods Workshops	2 = yes, 1 = no
24	Coll Sci Cour	College Science Courses	2 = yes, 1 = no
25	Teach Sci Full	Number of Fulltime Science Teachers	Number
26	Teach Sci M	Number of Male Science Teachers	Number
27	Teach Sci F	Number of Female Science Teachers	Number
28	Teach Sci	Number of Science Teachers (Fulltime and Parttime)	Number
#29	SCIP PS Roll	Enrollments in Physical Science Courses Using Science Course Improvement Projects Materials	Number
#30	SCIP ES Roll	Enrollments in Earth Science Courses Using Science Course Improvement Projects Materials	Number
#31	SCIP Bio Roll	Enrollments in Biological Science Courses Using Science Course Improvement Projects Materials	Number
#32	SCIP Chem Roll	Enrollments in Chemistry Courses Using Science Course Improvement Projects Materials	Number
#33	SCIP Phys Roll	Enrollments in Physics Courses Using Science Course Improvement Projects Materials	Number
34	Tot Roll	Total Student Enrollment	Number
35	CAE	Average Grade Level Enrollment	Mean
36	Age	Age of Teacher	Years
37	Sex	Sex of Teacher	2 = male,1 = female
38	Degree Held	Highest Degree Held by Teacher	1 = BS or BA 2 = MS or MA 3 = Specialist 4 = Ed.D. 5 = Ph.D.
39	Pursuing	Teacher Working Toward Higher Degree	2 = yes, 1 = no
#40	NSF Inserv	Teacher Participation in National Science Foundation Inservice Institutes	# of Institutes
#41	NSF Summer	Teacher Participation in National Science Foundation Summer Institutes	# of Institutes
42	Taught Sci	Secondary School Science Teaching Experience	Years
43	Movie Proj	Use of Motion Picture Projector	4 = frequently 3 = occasionally 2 = rarely 1 = not used
44	Slide Proj	Use of Slide Projector	
45	Overhead	Use of Overhead Projector	
46	Class #	Enrollment in Class Selected for This Survey	Number

TABLE 2 Continued

#47	Lecture	Teacher Ranking of Lecture as Important Learning Activity	4 = most often 3 = second most 2 = third most 1 = used 0 = not used
#48	Lect Disc	Teacher Ranking of Lecture Discussion as Important Learning Activity	
#49	Sci Dem	Teacher Ranking of Science Demonstrations as Important Learning Activity	
#50	Films	Teacher Ranking of Instructional Films as Important Learning Activity	
51	Ind Study	Teacher Ranking of Individual Study as Important Learning Activity	
#52	Ind Lab	Teacher Ranking of Individual Laboratory as Important Learning Activity	
#53	Group Lab	Teacher Ranking of Group Laboratory as Important Learning Activity	
54	Cl Assign	Teacher Ranking of In-Class Written Assignments as Important Learning Activity	
55	Field Trips	Teacher Ranking of Excursions and Field Trips as Important Learning Activity	
56	Prog Inst	Teacher Ranking of Programmed Instruction as Important Learning Activity	
57	Auto Tut	Teacher Ranking of Auto-tutorial Instruction as Important Learning Activity	
#58	G Tests	Teacher Ranking of Test Scores as Important Grading Method	
#59	Writ Assign	Teacher Ranking of Written Assignments as Important Grading Method	
#60	Part Class	Teacher Ranking of Student Participation in Class as Important Grading Method	
#61	Perf Lab	Teacher Ranking of Student Performance in Laboratory as Important Grading Method	
62	Sci Proj	Teacher Ranking of Student Performance on Science Projects as Important Grading Method	
63	Interest	Teacher Ranking of Student Interest in Science as Important Grading Method	
64	Innovation	Teacher Ranking of Innovative Programs as Important for High Quality Science Programs	3 = very important to 1 = not important
65	Admin Supp	Teacher Ranking of Administrative Support as Important for High Quality Science Programs	
66	Sci Fac	Teacher Ranking of Science Facilities as Important for High Quality Science Programs	
67	Salary	Teacher Ranking of Teacher Salaries as Important for High Quality Science Programs	
68	Inservice	Teacher Ranking of Inservice Education as Important for High Quality Science Programs	
69	Coop Staff	Teacher Ranking of Cooperative Staff as Important for High Quality Science Programs	
70	Small Classes	Teacher Ranking of Small Classes as Important for High Quality Science Programs	
71	Preps	Teacher Ranking of Small Number of Different Preparations as Important for High Quality Science Programs	
72	Load	Teacher Ranking of Teacher Load as Important for High Quality Science Programs	
#73	Satisfaction	Teacher Satisfaction With Science Teaching as a Career	5 = very satisfied 4 = satisfied 3 = neutral 2 = dissatisfied 1 = very dissatisfied
74	Hrs Bio	Teacher's College Biological Science Credits	Semester Hours
75	Hrs Phy Sci	Teacher's College Physical Science Credits	Semester Hours
76	Hrs Earth	Teacher's College Earth Science Credits	Semester Hours
77	Hrs Math	Teacher's College Mathematics Credits	Semester Hours
78	Hrs Sci	Teacher's College Science Credits	Semester Hours
#79	SCIP Bio TE	Teaching Experience Using Biology Science Course Improvement Project Materials	1 = yes, 0 = no
#80	SCIP Chem TE	Teaching Experience Using Chemistry Science Course Improvement Project Materials	1 = yes, 0 = no
#81	SCIP Earth TE	Teaching Experience Using Earth Science Science Course Improvement Project Materials	1 = yes, 0 = no
#82	SCIP Phys TE	Teaching Experience Using Physics Science Course Improvement Project Materials	1 = yes, 0 = no
#83	SCIP PS TE	Teaching Experience Using Physical Science Science Course Improvement Project Materials	1 = yes, 0 = no
84	Course Bio	Biology Course Chosen for This Survey	1 = yes, 0 = no
85	Course Chem	Chemistry Course Chosen for This Survey	1 = yes, 0 = no
86	Course Earth	Earth Science Course Chosen for This Survey	1 = yes, 0 = no
87	Course Physics	Physics Course Chosen for This Survey	1 = yes, 0 = no
88	Course Phy Sci	Physical Science Course Chosen for This Survey	1 = yes, 0 = no
#89	NSF	Teacher Participation in National Science Foundation Institutes	1 = yes, 0 = no

TABLE 3

MEANS AND STANDARD DEVIATIONS FOR TWENTY-SIX DEPENDENT VARIABLES

		Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Science Course Improvement Project Usage Variables										
Variable 18	Mean	1.76	1.81	1.79	1.57	1.38	1.67	1.59	1.41	1.55
	S.D.	0.42	0.39	0.41	0.50	0.49	0.47	0.49	0.49	0.49
	N	459	309	130	433	182	85	223	363	2184
Variable 29	Mean	44.51	32.83	49.25	29.10	44.24	47.13	59.46	43.57	41.52
	S.D.	121.03	93.76	101.22	91.32	184.93	103.82	125.17	130.04	119.51
	N	459	314	130	435	182	85	225	363	2193
Variable 30	Mean	18.32	8.86	20.07	19.85	14.65	28.58	38.06	13.42	18.69
	S.D.	60.04	33.26	69.61	77.54	62.67	71.17	105.96	64.70	69.33
	N	459	314	130	435	182	85	225	363	2193
Variable 31	Mean	125.59	162.49	126.29	96.03	69.81	102.48	99.48	61.97	106.32
	S.D.	218.09	210.50	171.20	363.43	165.16	156.18	474.18	141.35	273.17
	N	459	314	130	435	182	85	225	363	2193
Variable 32	Mean	38.44	48.66	48.94	23.90	15.81	22.49	28.93	14.12	30.14
	S.D.	77.36	70.14	89.38	60.62	51.13	50.44	93.80	55.36	70.88
	N	459	314	130	435	182	85	225	363	2193
Variable 33	Mean	19.53	22.97	24.69	15.93	10.47	11.36	19.85	5.76	16.30
	S.D.	39.38	36.61	46.66	45.60	29.88	26.62	67.43	19.50	41.47
	N	459	314	130	435	182	85	225	363	2193
Variable 79	Mean	0.23	0.27	0.23	0.14	0.19	0.14	0.19	0.13	0.19
	S.D.	0.42	0.44	0.42	0.35	0.39	0.35	0.39	0.34	0.39
	N	459	314	130	435	182	85	225	363	2193
Variable 80	Mean	0.10	0.15	0.12	0.08	0.03	0.11	0.10	0.05	0.09
	S.D.	0.30	0.36	0.32	0.27	0.18	0.31	0.30	0.21	0.28
	N	459	314	130	435	182	85	225	363	2193
Variable 81	Mean	0.03	0.03	0.04	0.04	0.02	0.09	0.05	0.04	0.04
	S.D.	0.17	0.18	0.19	0.19	0.15	0.29	0.23	0.21	0.19
	N	459	314	130	435	182	85	225	363	2193
Variable 82	Mean	0.07	0.10	0.15	0.06	0.04	0.02	0.06	0.06	0.07
	S.D.	0.26	0.29	0.35	0.23	0.19	0.15	0.23	0.24	0.25
	N	459	314	130	435	182	85	225	363	2193
Variable 83	Mean	0.09	0.09	0.13	0.10	0.08	0.20	0.17	0.10	0.11
	S.D.	0.29	0.29	0.34	0.30	0.28	0.40	0.38	0.30	0.31
	N	459	314	130	435	182	85	225	363	2193
Teacher Self Improvement Activities Variables										
Variable 40	Mean	0.39	0.31	0.65	0.72	0.38	0.62	0.62	0.42	0.52
	S.D.	0.89	0.93	1.29	1.41	1.01	1.07	1.26	0.80	1.09
	N	459	314	130	435	182	85	225	362	2192
Variable 41	Mean	1.29	1.42	1.61	1.13	1.19	1.07	1.20	0.89	1.20
	S.D.	1.61	1.60	1.85	1.52	1.47	1.38	1.43	1.26	1.52
	N	459	314	130	435	182	85	225	362	2192
Variable 89	Mean	0.62	0.72	0.68	0.62	0.58	0.69	0.64	0.58	0.63
	S.D.	0.49	0.45	0.47	0.49	0.49	0.46	0.48	0.49	0.48
	N	459	314	130	435	182	85	225	362	2192

TABLE 3 Continued

		Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Teaching Practices and Preferences Variables										
Variable 81	Mean	1.53	1.47	1.80	1.70	1.47	1.41	1.30	1.49	1.53
	S.D.	0.50	0.50	0.40	0.46	0.50	0.49	0.46	0.50	0.50
	N	453	306	129	431	182	83	221	353	2158
Variable 47	Mean	1.07	0.73	1.13	0.88	1.12	0.69	0.75	0.83	0.90
	S.D.	1.30	0.98	1.41	1.21	1.34	0.98	1.04	1.15	1.20
	N	459	313	130	434	182	85	224	362	2189
Variable 48	Mean	3.09	3.11	3.02	3.14	2.97	2.79	2.92	3.12	3.06
	S.D.	1.27	1.19	1.31	1.27	1.34	1.36	1.40	1.31	1.29
	N	459	313	130	434	182	85	224	362	2188
Variable 49	Mean	1.17	1.11	1.31	1.55	1.23	1.26	1.10	1.33	1.27
	S.D.	1.05	0.91	0.99	1.16	0.95	1.11	0.99	1.08	1.05
	N	459	313	130	434	182	85	224	362	2188
Variable 50	Mean	1.03	1.08	0.98	0.94	0.95	0.85	0.98	1.19	1.02
	S.D.	0.84	0.80	0.76	0.80	0.79	0.68	0.80	0.95	0.83
	N	459	313	130	434	182	85	224	362	2189
Variable 52	Mean	1.59	1.49	1.28	1.36	1.46	1.60	1.44	1.03	1.39
	S.D.	1.44	1.45	1.37	1.35	1.42	1.49	1.38	1.28	1.40
	N	459	313	130	434	182	85	224	362	2193
Variable 53	Mean	2.02	2.26	2.16	1.81	1.81	1.98	2.08	1.73	1.96
	S.D.	1.35	1.39	1.37	1.36	1.35	1.43	1.37	1.33	1.37
	N	459	313	130	434	182	85	224	362	2189
Variable 58	Mean	3.45	3.28	3.54	3.44	3.20	3.00	3.40	3.26	3.35
	S.D.	1.04	1.08	0.99	1.05	1.15	1.29	1.10	1.23	1.11
	N	454	309	126	430	180	85	221	357	2162
Variable 59	Mean	1.92	2.15	1.79	1.57	2.12	2.27	2.05	1.87	1.88
	S.D.	1.37	1.22	1.25	1.26	1.37	1.29	1.30	1.35	1.33
	N	454	309	126	430	180	85	221	357	2162
Variable 60	Mean	1.11	0.73	1.38	1.49	1.04	0.84	0.91	1.44	1.17
	S.D.	1.23	1.09	1.28	1.35	1.30	1.08	1.13	1.35	1.27
	N	454	309	126	430	180	85	221	357	2162
Variable 61	Mean	2.32	2.50	2.48	2.13	2.22	2.06	2.14	1.79	2.19
	S.D.	1.25	1.25	1.23	1.37	1.21	1.47	1.28	1.48	1.34
	N	454	309	126	430	180	85	221	357	2162
Teacher Satisfaction Variables										
Variable 73	Mean	4.55	4.53	4.45	4.52	4.46	4.36	4.32	4.37	4.47
	S.D.	0.67	0.62	0.73	0.69	0.68	0.76	0.74	0.75	0.70
	N	457	311	129	433	179	83	223	360	2172

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR SCHOOL ORGANIZATION, SCHEDULING AND ENROLLMENT VARIABLES

Variable Number		Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
		N = 439	N = 314	N = 130	N = 435	N = 182	N = 85	N = 225	N = 363	N = 2193
6	Mean	134.72	130.18	78.67	266.19	55.15	83.25	76.72	146.62	142.50
	S.D.	209.75	395.74	161.60	455.35	179.88	204.09	241.14	238.99	314.31
7	Mean	30.04	59.62	7.71	58.18	50.29	109.51	96.82	68.04	56.82
	S.D.	91.58	119.79	27.27	146.17	121.37	150.10	212.62	142.84	137.53
8	Mean	249.18	240.11	306.98	215.35	251.60	140.21	128.09	165.52	213.59
	S.D.	237.33	197.98	228.72	250.14	310.77	172.56	198.32	207.88	235.63
9	Mean	97.96	90.51	169.90	114.32	81.60	48.27	58.02	54.11	89.63
	S.D.	90.68	72.25	128.99	139.96	105.08	75.46	128.23	78.29	110.22
10	Mean	41.75	41.95	62.37	52.20	25.51	20.56	29.90	19.79	37.97
	S.D.	48.51	119.89	52.33	79.04	36.26	37.21	108.87	32.96	75.17
11	Mean	60.42	27.72	68.50	85.55	39.10	89.52	94.24	69.06	67.50
	S.D.	110.63	71.88	126.11	131.82	118.60	121.22	209.28	130.83	131.32
12	Mean	1.62	16.29	1.03	4.18	5.93	10.20	11.16	3.32	6.14
	S.D.	14.78	179.80	5.70	54.52	33.32	32.03	105.21	31.98	81.42
13	Mean	83.11	78.04	75.38	64.05	172.16	95.13	92.49	87.70	87.86
	S.D.	136.11	312.29	231.70	142.14	326.15	126.97	167.98	146.20	203.63
14	Mean	43.24	75.81	44.68	69.16	45.18	81.21	40.29	17.38	50.11
	S.D.	148.27	340.90	155.90	296.17	267.35	209.20	139.50	75.56	223.64
15	Mean	0.10	0.02	0.05	0.17	0.08	0.11	0.26	0.23	0.14
	S.D.	0.29	0.14	0.23	0.38	0.27	0.31	0.44	0.42	0.34
16	Mean	0.74	0.80	0.88	0.51	0.69	0.41	0.43	0.42	0.61
	S.D.	0.44	0.40	0.32	0.50	0.47	0.50	0.50	0.49	0.49
17	Mean	[illegible].14	0.17	0.05	0.28	0.22	0.43	0.30	0.26	0.22
	S.D.	0.35	0.37	0.23	0.45	0.42	0.50	0.46	0.44	0.41
34	Mean	1357.22	1609.39	1383.18	1371.21	1197.77	986.34	883.20	1028.90	1266.84
	S.D.	782.56	701.15	686.71	783.34	762.88	559.16	671.31	597.63	749.29
35	Mean	381.08	477.87	379.54	396.84	356.47	321.74	269.15	304.04	369.31
	S.D.	219.47	224.70	191.71	241.10	226.07	185.04	234.00	199.85	228.69

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR USE OF RESOURCES VARIABLES

Variable Number		Great Lakes N = 439	Farwest N = 314	New England N = 130	Mideast N = 435	Southwest N = 182	Rocky Mountains N = 85	Plains N = 225	Southeast N = 363	Total U.S. N = 2193
2	Mean	1.90	1.96	1.78	1.80	1.87	1.98	1.90	1.90	1.88
	S.D.	0.30	0.19	0.42	0.40	0.33	0.15	0.30	0.30	0.32
3	Mean	1.77	1.43	1.63	1.66	1.70	1.81	1.75	1.78	1.68
	S.D.	0.42	0.30	0.49	0.48	0.47	0.40	0.44	0.42	0.47
4	Mean	1.42	1.21	1.40	1.4[illegible]	1.50	1.55	1.49	1.51	1.42
	S.D.	0.49	0.41	0.49	0.50	0.51	0.50	0.50	0.50	0.50
5	Mean	1.16	1.09	1.12	1.18	1.15	1.25	1.11	1.11	1.14
	S.D.	0.37	0.28	0.33	0.38	0.36	0.44	0.31	0.32	0.35
19	Mean	1.64	1.73	1.67	1.62	1.64	1.59	1.53	1.64	1.64
	S.D.	0.48	0.44	0.47	0.49	0.48	0.49	0.50	0.48	0.48
20	Mean	1.46	1.45	1.41	1.41	1.56	1.63	1.40	1.38	1.47
	S.D.	0.50	0.50	0.49	0.50	0.50	0.48	0.49	0.49	0.50
21	Mean	0.45	0.56	0.30	0.49	0.43	0.65	0.31	0.99	0.56
	S.D.	0.80	0.87	0.84	0.84	0.78	0.92	0.66	0.95	0.86
22	Mean	0.41	0.50	0.47	0.37	0.51	0.44	0.34	0.45	0.43
	S.D.	0.68	0.71	0.68	0.67	0.73	0.64	0.62	0.70	0.69
23	Mean	1.72	1.77	1.70	1.73	1.75	1.71	1.75	1.77	1.74
	S.D.	0.45	0.42	0.46	0.44	0.43	0.48	0.46	0.42	0.44
24	Mean	1.55	1.71	1.60	1.59	1.57	1.61	1.53	1.58	1.59
	S.D.	0.50	0.46	0.49	0.49	0.50	0.51	0.52	0.49	0.50
43	Mean	2.30	2.55	2.28	2.21	2.26	2.27	2.31	2.29	2.31
	S.D.	0.70	0.62	0.67	0.69	0.78	0.73	0.73	0.74	0.71
44	Mean	1.81	1.83	1.80	1.80	1.64	1.83	1.79	1.72	1.78
	S.D.	0.84	0.76	0.86	0.81	0.78	0.82	0.80	0.89	0.82
45	Mean	2.38	2.38	2.27	2.30	2.35	2.28	2.36	2.20	2.32
	S.D.	0.79	0.82	0.79	0.84	0.85	0.88	0.82	0.90	0.84

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR SCIENCE COURSE VARIABLES

Variable Number		Great Lakes N = 439	Farwest N = 314	New England N = 130	Mideast N = 435	Southwest N = 182	Rocky Mountains N = 85	Plains N = 225	Southeast N = 363	Total U.S. N = 2193
46	Mean	24.36	26.91	21.80	25.43	24.91	26.06	23.40	26.68	25.18
	S.D.	6.14	9.00	7.05	6.56	7.44	6.65	7.31	8.29	7.47
84	Mean	0.40	0.36	0.23	0.26	0.37	0.34	0.31	0.31	0.33
	S.D.	0.49	0.48	0.42	0.44	0.49	0.48	0.46	0.46	0.47
85	Mean	0.20	0.15	0.21	0.22	0.19	0.11	0.17	0.16	0.18
	S.D.	0.40	0.36	0.41	0.42	0.39	0.31	0.38	0.37	0.39
86	Mean	0.05	0.04	0.04	0.12	0.05	0.06	0.11	0.05	0.07
	S.D.	0.22	0.18	0.19	0.3[illegible]	0.23	0.24	0.31	0.22	0.25
87	Mean	0.11	0.11	0.13	0.10	0.08	0.05	0.12	0.07	0.10
	S.D.	0.31	0.31	0.34	0.30	0.27	0.21	0.33	0.25	0.30
88	Mean	0.10	0.10	0.12	0.08	0.20	0.25	0.17	0.15	0.13
	S.D.	0.30	0.30	0.33	0.27	0.40	0.43	0.38	0.36	0.33

TABLE 7

MEANS AND STANDARD DEVIATIONS FOR TEACHER CHARACTERISTICS AND BACKGROUND VARIABLES

Variable Number		Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
		N = 459	N = 314	N = 130	N = 435	N = 182	N = 85	N = 225	N = 363	N = 2193
25	Mean	7.00	5.97	9.50	9.04	6.32	5.30	4.73	5.95	6.88
	S.D.	4.08	2.57	5.12	5.85	3.90	2.58	2.83	3.03	4.34
26	Mean	5.90	5.27	7.44	6.92	4.55	4.45	4.02	3.63	5.37
	S.D.	3.36	2.34	4.09	4.10	3.30	2.13	2.31	2.42	3.41
27	Mean	1.35	1.16	2.44	2.38	1.95	1.08	0.92	2.67	1.81
	S.D.	1.55	1.71	2.09	2.77	2.10	1.18	1.33	1.97	2.09
28	Mean	7.25	6.43	9.88	9.31	6.30	5.54	4.94	6.30	7.18
	S.D.	4.05	2.70	5.10	5.87	3.92	2.59	2.80	3.16	4.36
36	Mean	37.17	39.27	37.40	37.26	38.11	38.19	35.22	37.04	37.40
	S.D.	10.52	9.97	10.88	11.17	10.83	9.87	10.43	11.38	10.77
37	Mean	1.89	1.86	1.79	1.81	1.76	1.76	1.88	1.54	1.79
	S.D.	0.35	0.35	0.41	0.40	0.43	0.43	0.32	0.50	0.42
38	Mean	2.67	2.63	2.79	2.66	2.51	2.53	2.57	2.46	2.61
	S.D.	0.55	0.53	0.85	0.72	0.36	0.68	0.67	0.71	0.66
39	Mean	1.22	1.11	1.28	1.32	1.26	1.21	1.25	1.27	1.24
	S.D.	0.43	0.32	0.45	0.59	0.44	0.41	0.43	0.45	0.46
42	Mean	11.37	11.85	10.74	11.10	8.88	10.01	10.02	9.21	10.39
	S.D.	9.11	7.39	8.10	8.50	7.13	8.06	7.58	7.38	8.11
74	Mean	36.11	43.80	31.33	31.03	34.18	40.81	32.83	31.76	34.88
	S.D.	28.57	33.57	25.93	24.21	23.15	27.33	26.06	21.40	26.90
75	Mean	32.26	35.41	42.37	34.01	30.84	29.19	30.49	24.35	31.93
	S.D.	27.58	26.34	29.05	26.90	26.09	26.42	23.91	18.38	25.84
76	Mean	5.48	7.21	5.46	9.03	5.93	9.22	6.16	4.94	6.60
	S.D.	8.86	10.99	10.36	13.17	9.78	10.87	9.52	8.66	10.52
77	Mean	13.56	13.80	14.44	13.89	13.16	12.45	14.36	10.67	13.26
	S.D.	13.10	13.53	10.62	10.99	13.60	12.64	13.50	10.13	12.29
78	Mean	73.86	86.42	79.16	74.07	70.95	79.22	69.48	61.05	73.41
	S.D.	32.40	34.75	33.27	31.56	30.92	31.64	29.97	27.12	32.24

TABLE 8

MEANS AND STANDARD DEVIATIONS FOR TEACHING PRACTICES, PREFERENCES AND CONCERNS VARIABLES

Variable Number		Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
		N = 459	N = 314	N = 130	N = 435	N = 182	N = 83	N = 225	N = 363	N = 2193
51	Mean	0.64	0.75	0.58	0.57	0.80	0.76	0.87	0.71	0.69
	S.D.	0.89	0.96	0.97	0.82	0.91	0.97	1.10	0.92	0.93
54	Mean	0.86	1.05	0.59	0.63	0.97	1.11	0.96	0.99	0.88
	S.D.	0.92	1.02	0.80	0.79	0.92	0.94	0.91	1.03	0.93
55	Mean	0.38	0.32	0.31	0.35	0.37	0.34	0.36	0.32	0.35
	S.D.	0.60	0.54	0.58	0.54	0.60	0.50	0.52	0.54	0.56
56	Mean	0.15	0.20	0.18	0.18	0.13	0.22	0.21	0.13	0.17
	S.D.	0.47	0.52	0.46	0.57	0.35	0.64	0.56	0.45	0.50
57	Mean	0.10	0.06	0.08	0.09	0.14	0.08	0.12	0.06	0.09
	S.D.	0.42	0.26	0.35	0.37	0.47	0.28	0.46	0.27	0.37
62	Mean	0.30	0.31	0.33	0.30	0.41	0.51	0.36	0.43	0.35
	S.D.	0.74	0.77	0.85	0.72	0.76	1.08	0.76	0.80	0.78
63	Mean	0.26	0.12	0.18	0.21	0.27	0.14	0.14	0.34	0.22
	S.D.	0.71	0.46	0.51	0.55	0.68	0.47	0.48	0.79	0.63
64	Mean	4.30	4.45	4.32	4.38	4.21	4.46	4.29	4.26	4.33
	S.D.	0.90	0.83	0.90	0.84	0.92	0.72	0.89	0.92	0.88
65	Mean	4.43	4.50	4.41	4.45	4.51	4.55	4.43	4.53	4.47
	S.D.	0.83	0.81	0.77	0.82	0.71	0.74	0.80	0.74	0.79
66	Mean	4.62	4.56	4.65	4.66	4.64	4.63	4.64	4.73	4.64
	S.D.	0.64	0.69	0.61	0.64	0.68	0.58	0.58	0.59	0.64
67	Mean	3.60	3.53	3.75	3.56	3.67	3.51	3.74	3.64	3.61
	S.D.	1.15	1.14	1.09	1.20	1.21	1.20	1.06	1.20	1.15
68	Mean	3.79	3.73	3.86	3.51	3.63	4.10	3.76	3.90	3.74
	S.D.	1.08	1.08	1.06	1.21	1.17	0.96	1.09	1.10	1.12
69	Mean	4.39	4.50	4.49	4.41	4.40	4.40	4.29	4.42	4.41
	S.D.	0.86	0.74	0.78	0.84	0.78	0.81	0.81	0.80	0.81
70	Mean	4.34	4.45	4.46	4.38	4.43	4.40	4.22	4.32	4.40
	S.D.	0.83	0.74	0.64	0.80	0.75	0.68	0.92	0.74	0.79
71	Mean	4.31	4.43	4.30	4.24	4.29	4.20	4.29	4.27	4.30
	S.D.	0.89	0.83	0.77	0.90	0.93	0.81	0.81	0.95	0.88
72	Mean	3.98	4.13	4.13	4.01	4.04	3.90	3.95	4.25	4.06
	S.D.	0.95	0.95	0.85	0.98	0.99	0.91	0.97	0.90	0.95

Section III

Use of Science Course Improvement Projects

Information concerning this variable was obtained from the Principal's Questionnaire. If enrollment figures were reported for any of the existing NSF-supported Science Course Improvement Projects this variable was assigned a value of two, otherwise it was assigned a value of one. Science Course Improvement Projects are abbreviated as SCIP throughout this report. The mean values for Use of Science Course Improvement Projects are given by region in Table 9. They range from a high of 1.81 for the Farwest to a low of 1.38 for the Southwest. This can be interpreted to mean that 30 to 80 percent of the schools responding were using at least one NSF Science Course Improvement Project (SCIP) depending on the region. Both of the southern regions, Southwest and Southeast, were below 50 percent use.

TABLE 9

MEANS[a] AND STANDARD DEVIATIONS FOR USE OF SCIENCE COURSE IMPROVEMENT PROJECTS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.76	1.81	1.79	1.57	1.38	1.67	1.59	1.41	1.53
S.D.	0.42	0.39	0.41	0.50	0.49	0.47	0.49	0.49	0.49
N	459	309	130	433	182	85	223	363	2184

[a] yes = 2, no = 1

The Use of Science Course Improvement Projects resulted in significant ($\alpha \leq 0.001$) positive correlations in at least four of the eight regions with the following variables:

- +Total Student Enrollment
- +Biology, Chemistry and Physics Enrollments
- +Science Course Improvement Project Enrollments
- +Total Number of Teachers
- +Highest Degree Held by Teachers
- +Teacher Ranking of Student Performance in Laboratory as Important Grading Method
- +Teaching Experience Using Biology Science Course Improvement Project Materials
- +Teacher of Twelfth Grade Science Course

The Use of Science Course Improvement Projects resulted in significant ($\alpha \leq 0.001$) negative correlations in at least four of the regions with the following variables:

-General Science Enrollment
-Teacher Ranking of Science Demonstration as Important
Learning Activity

It can be seen that these relationships may be dependent upon school size and the grade levels included in a school. To investigate the influence of these characteristics on the correlations, four stepwise multiple regression analyses were performed:

1) Analysis #1: All variables were allowed to enter in the order which added the most to the prediction equation.

2) Analysis #2: The Total Student Enrollment Variable was forced to enter first, thus partialling out its relation to Use of Science Course Improvement Projects and all the other variables. The remaining variables were then allowed to enter stepwise in the order which added the most to the prediction equation.

3) Analysis #3: School Type was forced to enter first followed by the stepwise analysis. School Type was composed of three dichotomous variables. They were

    (a) schools including both junior and senior high school students (Type J-Sr).

    (b) schools including senior high students only (Type-Sr).

    (c) schools include junior high school students only (Type-Jr).

4) Analysis #4: Both School Type and Total Student Enrollment were forced to enter and then the stepwise analysis followed.

The results of these analyses are given in Table 10 for each region. Total School Enrollment occurred most frequently as a significant contributor to the multiple regression prediction of Use of Science Course Improvement Projects. In the Great Lakes, Southwest, Plains and Southeast the larger schools tend to report use of at least one of the Improvement Projects more so than the smaller schools.

Other variables which contributed to the prediction of Use of Science Course Improvement Projects in two of the eight regions were

1) School type in the Great Lakes and Farwest regions - the high schools reported use more frequently than the junior highs.

TABLE 10

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF USE OF SCIENCE COURSE IMPROVEMENT PROJECTS

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	9	Roll Chem	0.29	0.08	0.08	0.29
Total Enroll. Forced	34	Tot Roll	0.27	0.07	0.07	0.27
School Type Forced	15	Type J-Sr	0.17	0.03	0.03	-0.17
	16	Type Sr	0.26	0.07	0.04	0.26
	17	Type Jr	0.27	0.07	0.00	-0.13
	28	Teach Sci	0.35	0.12	0.05	0.27
School Type & Total Enroll. Forced	15	Type J-Sr	0.17	0.03	0.03	-0.17
	16	Type Sr	0.26	0.07	0.04	0.26
	17	Type Jr	0.27	0.07	0.00	-0.13
	34	Tot Roll	0.33	0.11	0.04	0.27

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None					
Total Enroll. Forced	34	Tot Roll	0.07	0.01	0.01	0.07
School Type Forced	15	Type J-Sr	0.06	0.00	0.00	0.06
	16	Type Sr	0.15	0.02	0.02	0.10
	17	Type Jr	0.15	0.02	0.00	-0.13
School Type & Total Enroll. Forced	15	Type J-Sr	0.06	0.00	0.00	0.06
	16	Type Sr	0.15	0.02	0.02	0.10
	17	Type Jr	0.15	0.02	0.00	-0.13
	34	Tot Roll	0.16	0.02	0.00	0.07

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	9	Roll Chem	0.31	0.10	0.10	0.31
	10	Roll Phys	0.39	0.15	0.05	0.27
Total Enroll. Forced	34	Tot Roll	0.14	0.02	0.02	0.14
	9	Roll Chem	0.32	0.10	0.08	0.31
	10	Roll Phys	0.43	0.18	0.08	0.27
School Type Forced	15	Type J-Sr	0.11	0.01	0.01	-0.11
	16	Type Sr	0.30	0.09	0.08	0.30
	17	Type Jr	0.33	0.11	0.02	[illegible]
	10	Roll Phys	0.40	0.16	0.05	0.27
School Type & Total Enroll. Forced	15	Type J-Sr	0.11	0.01	0.01	-0.11
	16	Type Sr	0.30	0.09	0.08	0.30
	17	Type Jr	0.33	0.11	0.02	-0.30
	34	Tot Roll	0.33	0.11	0.00	0.14
	10	Roll Phys	0.40	0.16	0.05	0.27

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	34	Tot Roll	0.27	0.07	0.07	0.27
Total Enroll. Forced	34	Tot Roll	0.27	0.07	0.07	0.27
School Type Forced	15	Type J-Sr	0.14	0.02	0.02	-0.14
	16	Type Sr	0.15	0.02	0.00	0.11
	17	Type Jr	0.15	0.02	0.00	-0.03
	34	Tot Roll	0.27	0.08	0.05	0.27
School Type & Total Enroll. Forced	15	Type J-Sr	0.14	0.02	0.02	-0.14
	16	Type Sr	0.15	0.02	0.00	0.11
	17	Type Jr	0.15	0.02	0.00	-0.03
	34	Tot Roll	0.27	0.08	0.05	0.27

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	2	Teach Buy Eq	0.32	0.10	0.10	0.32
	20	Sci Fair	0.40	0.16	0.06	-0.25
Total Enroll. Forced	34	Tot Roll	0.03	0.00	0.00	-0.03
	2	Teach Buy Eq	0.32	0.10	0.10	0.32
	20	Sci Fair	0.40	0.16	0.06	-0.25
	9	Roll Chem	0.47	0.22	0.06	0.13
School Type Forced	15	Type J-Sr	0.04	0.00	0.00	0.04
	16	Type Sr	0.05	0.00	0.00	-0.01
	17	Type Jr	0.07	0.01	0.00	-0.05
	2	Teach Buy Eq	0.32	0.10	0.10	0.32
	20	Sci Fair	0.41	0.17	0.06	-0.25
School Type & Total Enroll. Forced	15	Type J-Sr	0.04	0.00	0.00	0.04
	16	Type Sr	0.05	0.00	0.00	-0.01
	17	Type Jr	0.07	0.01	0.00	-0.05
	34	Tot Roll	0.08	0.01	0.00	-0.03
	2	Teach Buy Eq	0.32	0.10	0.10	0.32
	20	Sci Fair	0.41	0.17	0.06	-0.25
	9	Roll Chem	0.48	0.23	0.06	0.13
	11	Roll Earth	0.52	0.27	0.05	-0.16

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61	Perf Lab	0.37	0.14	0.14	0.37
	14	Roll Health	0.50	0.25	0.11	-0.35
	24	Col Sci Cour	0.56	0.32	0.07	0.30
	41	NSF Summer	0.61	0.37	0.05	0.18
	40	NSF Inserv	0.66	0.43	0.06	-0.18
	20	Sci Fair	0.70	0.48	0.05	-0.10
	60	Part Class	0.75	0.57	0.08	-0.20
Total Enroll. Forced	34	Tot Roll	0.04	0.00	0.00	0.04
	14	Roll Health	0.39	0.15	0.15	-0.35
	61	Perf Lab	0.51	0.26	0.11	0.37
	24	Col Sci Cour	0.56	0.32	0.06	0.30
	41	NSF Summer	0.61	0.38	0.06	0.18
	40	NSF Inserv	0.66	0.44	0.06	-0.18
	60	Part Class	0.70	0.49	0.05	-0.20
	20	Sci Fair	0.76	0.57	0.08	-0.10
School Type Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.19	0.03	0.03	0.18
	17	Type Jr	0.21	0.05	0.01	-0.12
	14	Roll Health	0.44	0.20	0.15	-0.35
	61	Perf Lab	0.54	0.29	0.10	0.37
	24	Col Sci Cour	0.60	0.36	0.07	0.30
	41	NSF Summer	0.63	0.40	0.04	0.18
	20	Sci Fair	0.67	0.45	0.05	-0.10
	60	Part Class	0.72	0.53	0.07	-0.20
	40	NSF Inserv	0.76	0.58	0.05	-0.18
School Type & Total Enroll. Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.19	0.03	0.03	0.18
	17	Type Jr	0.21	0.05	0.01	-0.12
	34	Tot Roll	0.22	0.05	0.00	0.04
	14	Roll Health	0.45	0.20	0.15	-0.35
	61	Perf Lab	0.54	0.30	0.09	0.37
	24	Col Sci Cour	0.60	0.37	0.07	0.30
	41	NSF Summer	0.64	0.41	0.05	0.18
	20	Sci Fair	0.68	0.46	0.05	-0.10
	60	Part Class	0.73	0.53	0.07	-0.20
	40	NSF Inserv	0.77	0.59	0.06	-0.18

TABLE 10 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	26 Teach Sci M	0.36	0.13	0.13	0.36
	89 MSF	0.48	0.23	0.10	0.36
	49 Sci Demo	0.54	0.29	0.06	-0.28
Total Enroll. Forced	34 Tot Roll	0.26	0.07	0.07	0.26
	89 MSF	0.42	0.17	0.11	0.36
	49 Sci Demo	0.49	0.24	0.06	-0.28
	26 Teach Sci M	0.54	0.29	0.05	0.36
School Type Forced	15 Type J-Sr	0.12	0.01	0.01	-0.12
	16 Type Sr	0.12	0.02	0.00	0.04
	17 Type Jr	0.13	0.02	0.00	0.06
	26 Teach Sci M	0.37	0.14	0.12	0.36
	89 MSF	0.48	0.23	0.09	0.36
	49 Sci Demo	0.54	0.29	0.06	-0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.12	0.01	0.01	-0.12
	16 Type Sr	0.12	0.02	0.00	0.04
	17 Type Jr	0.13	0.02	0.00	0.06
	34 Tot Roll	0.27	0.07	0.06	0.26
	89 MSF	0.42	0.18	0.11	0.36
	49 Sci Demo	0.49	0.24	0.06	-0.28
	26 Teach Sci M	0.54	0.29	0.05	0.36

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	34 Tot Roll	0.33	0.11	0.11	0.33
	61 Perf Lab	0.40	0.16	0.05	0.28
Total Enroll. Forced	34 Tot Roll	0.33	0.11	0.11	0.33
	61 Perf Lab	0.40	0.16	0.05	0.28
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.07	0.00	0.00	0.02
	34 Tot Roll	0.33	0.11	0.11	0.33
	61 Perf Lab	0.40	0.16	0.05	0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.07	0.00	0.00	0.02
	34 Tot Roll	0.33	0.11	0.11	0.33
	61 Perf Lab	0.40	0.16	0.05	0.28

All Regions Combined (N = 2184)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	34 Tot Roll	0.23	0.05	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.23	0.05	0.05	0.23
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.19	0.04	0.03	0.19
	17 Type Jr	0.19	0.04	0.00	-0.12
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.19	0.04	0.03	0.19
	17 Type Jr	0.19	0.04	0.00	-0.12
	34 Tot Roll	0.26	0.07	0.03	0.23

2) Chemistry enrollment in the Farwest and New England regions - When chemistry enrollments were high the schools had a greater tendency to use improvement projects.

3) Participation in NSF Institutes in the Rocky Mountains and Plains regions - Teachers who had participated in NSF Institutes reported use of improvement projects more frequently than those not attending.

4) Teacher Ranking of Student Performance in Laboratory as Important Grading Method in Rocky Mountains and Southeast regions - Those teachers who considered laboratory performance as an important part of grading more frequently reported use of the improvement projects.

5) School Sponsored Science Fair Participation for their own students in New England and Rocky Mountains regions - The schools sponsoring science fairs were not the schools which reported the use of the science course improvement projects.

There was no predictor or group of predictors of Use of Science Course Improvement Projects that could be applied consistently across all eight regions. Total Student Enrollment and specific course enrollments such as chemistry, physics, and earth science represent a group of variables generally predictive of SCIP usage.

Physical Science

Two variables were used as indicators of the Use of Science Course Improvement Projects in physical science courses. These indicators were:

Teaching Experience Using Physical Science Science Course Improvement Project Materials.

Enrollments in Physical Science Courses Using Science Course Improvement Project Materials.

Information concerning whether or not a teacher had taught physical science course using SCIP materials was obtained from the Science Teacher Questionnaire.

Information concerning physical science enrollments was obtained from the enrollment responses on the Principal's Questionnaire. The enrollment for IPS, ISCS and SSSP were combined to get the enrollment variable for SCIP Physical Science Courses. The mean values for Teaching Experience Using Physical Science Science Course Improvement Project Materials are given in Table 11. They range from a high of 0.20 in the Rocky Mountains region to a low of 0.08 in the Southwest. These values can be interpreted to mean that 8 to 20 percent of the teachers responding have taught physical science using some Science Course Improvement Project. The Rocky Mountains and the Plains regions had the greatest percentage of teachers reporting that they had taught physical science using some SCIP.

TABLE 11

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHING EXPERIENCE USING PHYSICAL SCIENCE SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.09	0.09	0.13	0.10	0.08	0.20	0.17	0.10	0.11
S.D.	0.29	0.29	0.34	0.30	0.28	0.40	0.38	0.30	0.31
N	459	314	130	435	182	85	225	363	2193

[a] yes = 1, no = 0

The mean values for Enrollments in Physical Science Courses Using SCIP Materials are given in Table 12. These values range from a high of 59.46 in the Plains region to a low of 29.10 in the Mideast. The Farwest region also reported relatively low mean enrollments. The relatively large variability as indicated by the size of the standard deviations is due to some schools reporting no Physical Science SCIP Enrollments while others reported very large enrollments. Often a school would have all of a particular grade level, such as the ninth grade, enrolled in such a course. For instance, the Southwest region had three schools reporting 600 or more students taking IPS.

TABLE 12

MEANS AND STANDARD DEVIATIONS FOR ENROLLMENTS IN PHYSICAL SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	44.51	32.83	49.25	29.10	44.24	47.13	59.46	43.57	41.52
S.D.	121.03	93.76	101.22	91.32	184.93	103.82	125.17	130.04	119.51
N	459	314	130	435	182	85	225	363	2193

The variable Teaching Experience Using Physical Science SCIP Materials resulted in positive significant correlations ($\alpha \leq 0.001$) in at least four of the regions with the following variables:

+Enrollments in SCIP Physical Science
+Enrollments in Chemistry
+Type of School (Junior High)
+Physical Science Course Chosen for This Survey
+Teacher Ranking of Student Performance in Laboratory as
  Important Grading Method

Significant negative correlations ($\alpha \leq 0.001$) were found for the following variables:

-Type of School (Senior High)
-Teacher Ranking of Lecture Discussion as Important Teaching Method
-Teacher Ranking of Test Scores as Important Grading Method

The Enrollment in Physical Science Courses Using SCIP Materials positively correlated ($\alpha \leq 0.001$) in at least four of the regions with the following variables:

+Enrollments in Physical Science and/or 7th and 8th grade enrollments
+School Type (Junior High)
+Enrollment in ESCP
+Physical Science Course Chosen for This Survey
+Teacher Hours of Earth Science

The negative correlates were school type related. If the school had senior high level students only, the Physical Science SCIP Enrollment was low.

The stepwise regression analyses of Teaching Experience Using Physical Science SCIP Materials partialling out school type and/or Total Enrollment are reported in Table 13 for each region. From these results it appears that the best predictors of whether a teacher has taught physical science using SCIP materials were whether or not the course selected for this survey was a physical science course and in a school type including junior high grade levels. The Rocky Mountains region resulted in the Teacher Ranking of Individual Laboratory Activity Importance as the best predictor after the school type and total enrollment effects were removed. Those teachers who have taught physical science using SCIP materials valued the individual laboratory approach to teaching science.

The stepwise regression analyses for Enrollment in Physical Science Courses Using SCIP Materials are reported in Table 14. From the stepwise regression analyses it can be seen that the best predictors of SCIP Physical Science Enrollment are overall physical science enrollment and whether or not the course selected for the survey was a SCIP physical science course.

These relationships are similar to those obtained with the previous variable except for one. The positive relationship of Physical Science SCIP Enrollments and ESCP Enrollments suggest that schools which use SCIP materials in one area tend to do so in other areas of science. In addition, the positive correlation with teacher hours in Earth Science suggest that those teachers of Earth Science who were using the SCIP materials had greater preparation than those teachers not using the materials.

Another variable which contributed significantly to SCIP Physical Science Enrollment in the Rocky Mountain and Plains regions was the ESCP Enrollments. This was true when the effects of Total Enrollment and/or School Type were removed. These results were consistent with the interpretation made earlier. That is the schools where ESCP enrollments were high tend to have high Physical Science SCIP Enrollments.

TABLE 13

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHING EXPERIENCE USING PHYSICAL SCIENCE, SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88	Course Phy Sci	0.38	0.14	0.14	0.38
	17	Type Jr	0.44	0.19	0.05	0.29
Total Enroll. Forced	34	Tot Roll	0.01	0.00	0.00	-0.01
	88	Course Phy Sci	0.38	0.14	0.14	0.38
	17	Type Jr	0.44	0.19	0.05	0.29
School Type Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.25	0.06	0.06	-0.21
	17	Type Jr	0.29	0.08	0.02	0.29
	88	Course Phy Sci	0.44	0.20	0.11	0.38
School Type & Total Enroll. Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.25	0.06	0.06	-0.21
	17	Type Jr	0.29	0.08	0.02	0.29
	34	Tot Roll	0.29	0.09	0.00	-0.01
	88	Course Phy Sci	0.45	0.20	0.11	0.38

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88	Course Phy Sci	0.41	0.17	0.17	0.41
	29	SCIP PS Roll	0.48	0.23	0.06	0.35
Total Enroll. Forced	34	Tot Roll	0.09	0.01	0.01	-0.09
	88	Course Phy Sci	0.42	0.17	0.16	0.41
	29	SCIP PS Roll	0.48	0.23	0.06	0.35
School Type Forced	15	Type J-Sr	0.01	0.00	0.00	0.01
	16	Type Sr	0.23	0.05	0.05	-0.21
	17	Type Jr	0.24	0.06	0.00	0.22
	88	Course Phy Sci	0.45	0.20	0.15	0.41
	29	SCIP PS Roll	0.50	0.25	0.05	0.35
School Type & Total Enroll. Forced	15	Type J-Sr	0.01	0.00	0.00	0.01
	16	Type Sr	0.23	0.05	0.05	-0.21
	17	Type Jr	0.24	0.06	0.00	0.22
	34	Tot Roll	0.24	0.06	0.00	-0.09
	88	Course Phy Sci	0.45	0.20	0.14	0.41
	29	SCIP PS Roll	0.50	0.25	0.05	0.35

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88	Course Phy Sci	0.41	0.17	0.17	0.41
	29	SCIP PS Roll	0.48	0.23	0.06	0.37
Total Enroll. Forced	34	Tot Roll	0.13	0.02	0.02	-0.13
	88	Course Phy Sci	0.42	0.17	0.16	0.41
	29	SCIP PS Roll	0.48	0.23	0.05	0.37
School Type Forced	15	Type J-Sr	0.04	0.00	0.00	-0.04
	16	Type Sr	0.19	0.04	0.04	-0.17
	17	Type Jr	0.19	0.04	0.00	0.18
	88	Course Phy Sci	0.43	0.18	0.14	0.41
	29	SCIP PS Roll	0.48	0.23	0.05	0.37
School Type & Total Enroll. Forced	15	Type J-Sr	0.04	0.00	0.00	-0.04
	16	Type Sr	0.19	0.04	0.04	-0.17
	17	Type Jr	0.19	0.04	0.00	0.18
	34	Tot Roll	0.22	0.05	0.01	-0.13
	88	Course Phy Sci	0.43	0.19	0.14	0.41
	29	SCIP PS Roll	0.48	0.23	0.05	0.37

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	17	Type Jr	0.37	0.14	0.14	0.37
Total Enroll. Forced	34	Tot Roll	0.13	0.02	0.02	-0.13
	17	Type Jr	0.38	0.14	0.13	0.37
School Type Forced	15	Type J-Sr	0.09	0.01	0.01	-0.09
	16	Type Sr	0.40	0.16	0.15	-0.31
	17	Type Jr	0.40	0.16	0.00	0.37
School Type & Total Enroll. Forced	15	Type J-Sr	0.09	0.01	0.01	-0.09
	16	Type Sr	0.40	0.16	0.15	-0.31
	17	Type Jr	0.40	0.16	0.00	0.37
	34	Tot Roll	0.41	0.17	0.01	-0.13

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88	Course Phy Sci	0.62	0.38	0.36	0.62
	15	Type J-Sr	0.67	0.45	0.07	0.21
Total Enroll. Forced	34	Tot Roll	0.25	0.06	0.06	-0.25
	88	Course Phy Sci	0.63	0.40	0.34	0.62
	15	Type J-Sr	0.68	0.46	0.06	0.21
School Type Forced	15	Type J-Sr	0.21	0.04	0.04	0.21
	16	Type Sr	0.36	0.13	0.09	-0.36
	17	Type Jr	0.39	0.15	0.02	0.31
	88	Course Phy Sci	0.69	0.47	0.32	0.62
School Type & Total Enroll. Forced	15	Type J-Sr	0.21	0.04	0.04	0.21
	16	Type Sr	0.36	0.13	0.09	-0.36
	17	Type Jr	0.39	0.15	0.02	[illegible]
	34	Tot Roll	0.42	0.18	0.03	-0.25
	88	Course Phy Sci	0.69	0.47	0.30	0.62

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88	Course Phy Sci	0.40	0.16	0.16	0.40
	52	Ind Lab	0.51	0.26	0.11	0.37
	89	NSF	0.58	0.33	0.07	-0.18
Total Enroll. Forced	34	Tot Roll	0.09	0.01	0.01	-0.09
	52	Ind Lab	0.41	0.17	0.16	0.37
	88	Course Phy Sci	0.52	0.27	0.11	0.40
	89	NSF	0.58	0.34	0.07	-0.18
	20	Sci Fair	0.61	0.38	0.04	0.14
	45	Overhead	0.65	0.43	0.05	-0.19
School Type Forced	15	Type J-Sr	0.11	0.01	0.01	0.11
	16	Type Sr	0.24	0.06	0.05	-0.24
	17	Type Jr	0.28	0.08	0.02	0.20
	52	Ind Lab	0.52	0.27	0.19	0.37
	88	Course Phy Sci	0.57	0.33	0.06	0.40
	89	NSF	0.61	0.37	0.04	-0.18
	20	Sci Fair	0.65	0.42	0.05	0.14
School Type & Total Enroll. Forced	15	Type J-Sr	0.11	0.01	0.01	0.11
	16	Type Sr	0.24	0.06	0.05	-0.24
	17	Type Jr	0.28	0.08	0.02	0.20
	34	Tot Roll	0.28	0.08	0.00	-0.09
	52	Ind Lab	0.52	0.27	0.19	0.37
	88	Course Phy Sci	0.57	0.33	0.06	0.40
	89	NSF	0.61	0.37	0.04	-0.18
	20	Sci Fair	0.65	0.42	0.05	0.14

TABLE 13 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	29 SCIP PS Roll	0.57	0.33	0.33	0.57
	88 Course Phy Sci	0.64	0.42	0.09	0.45
Total Enroll. Forced	34 Tot Roll	0.07	0.01	0.01	0.07
	29 SCIP PS Roll	0.57	0.33	0.32	0.57
	88 Course Phy Sci	0.65	0.42	0.09	0.45
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.38	0.15	0.13	-0.24
	17 Type Jr	0.39	0.15	0.00	0.38
	29 SCIP PS Roll	0.58	0.34	0.19	0.57
	88 Course Phy Sci	0.65	0.42	0.08	0.45
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.38	0.15	0.13	-0.24
	17 Type Jr	0.39	0.15	0.00	0.38
	34 Tot Roll	0.39	0.15	0.00	0.07
	29 SCIP PS Roll	0.58	0.34	0.19	0.57
	88 Course Phy Sci	0.65	0.42	0.08	0.45

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.58	0.33	0.33	0.58
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	-0.05
	88 Course Phy Sci	0.58	0.33	0.33	0.58
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.26	0.07	0.06	-0.18
	17 Type Jr	0.27	0.07	0.01	0.25
	88 Course Phy Sci	0.60	0.36	0.29	0.58
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.26	0.07	0.06	-0.18
	17 Type Jr	0.27	0.07	0.01	0.25
	34 Tot Roll	0.27	0.07	0.00	-0.05
	88 Course Phy Sci	0.60	0.36	0.29	0.58

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.44	0.19	0.19	0.44
	29 SCIP PS Roll	0.49	0.24	0.05	0.32
Total Enroll. Forced	34 Tot Roll	0.08	0.01	0.01	-0.08
	88 Course Phy Sci	0.44	0.19	0.19	0.44
	29 SCIP PS Roll	0.49	0.24	0.05	0.32
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.26	0.07	0.07	-0.22
	17 Type Jr	0.27	0.08	0.01	0.27
	88 Course Phy Sci	0.47	0.22	0.15	0.44
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.26	0.07	0.07	-0.22
	17 Type Jr	0.27	0.08	0.01	0.27
	34 Tot Roll	0.28	0.08	0.00	-0.08
	88 Course Phy Sci	0.47	0.22	0.15	0.44

TABLE 14

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF ENROLLMENTS IN PHYSICAL SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	13 Roll Phy Sci	0.34	0.12	0.12	0.34
	88 Course Phy Sci	0.40	0.16	0.04	0.24
	32 SCIP Chem Roll	0.46	0.21	0.05	0.28
Total Enroll. Forced	34 Tot Roll	0.21	0.05	0.05	0.21
	13 Roll Phy Sci	0.35	0.12	0.08	0.34
	88 Course Phy Sci	0.41	0.17	0.05	0.24
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.18	0.03	0.03	-0.09
	17 Type Jr	0.19	0.03	0.00	0.17
	13 Roll Phy Sci	0.38	0.14	0.11	0.34
	32 SCIP Chem Roll	0.45	0.21	0.06	0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.18	0.03	0.03	-0.09
	17 Type Jr	0.19	0.03	0.00	0.17
	34 Tot Roll	0.30	0.09	0.06	0.21
	13 Roll Phy Sci	0.40	0.16	0.07	0.34
	32 SCIP Chem Roll	0.45	0.21	0.05	0.28

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.27	0.07	0.07	0.27
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	0.00
	88 Course Phy Sci	0.27	0.07	0.07	0.27
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.11	0.01	0.01	-0.09
	17 Type Jr	0.14	0.02	0.01	0.14
	88 Course Phy Sci	0.30	0.09	0.07	0.27
	30 SCIP ES Roll	0.37	0.14	0.05	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.11	0.01	0.01	-0.09
	17 Type Jr	0.14	0.02	0.01	0.14
	34 Tot Roll	0.15	0.02	0.00	0.00
	88 Course Phy Sci	0.30	0.09	0.07	0.27
	30 SCIP ES Roll	0.37	0.14	0.05	0.22

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.34	0.12	0.12	0.34
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	-0.14
	88 Course Phy Sci	0.36	0.13	0.11	0.34
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.27	0.07	0.07	-0.24
	17 Type Jr	0.29	0.08	0.01	0.29
	88 Course Phy Sci	0.40	0.16	0.08	0.34
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.27	0.07	0.07	-0.24
	17 Type Jr	0.29	0.08	0.01	0.29
	34 Tot Roll	0.30	0.09	0.01	-0.14
	88 Course Phy Sci	0.41	0.17	0.08	0.34

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	65 Admin Supp	0.24	0.06	0.06	-0.24
	61 Perf Lab	0.34	0.11	0.06	0.23
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	0.14
	65 Admin Supp	0.26	0.07	0.05	-0.24
	61 Perf Lab	0.34	0.12	0.05	0.23
School Type Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.08	0.01	0.00	-0.01
	17 Type Jr	0.09	0.01	0.00	0.07
	65 Admin Supp	0.27	0.07	0.06	-0.24
	61 Perf Lab	0.36	0.13	0.06	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.08	0.01	0.00	-0.01
	17 Type Jr	0.09	0.01	0.00	0.07
	34 Tot Roll	0.16	0.03	0.02	0.14
	65 Admin Supp	0.28	0.08	0.06	-0.24
	61 Perf Lab	0.36	0.13	0.05	0.23

New England (N = 130

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.27	0.07	0.07	0.27
	33 SCIP Phys Roll	0.38	0.15	0.07	0.24
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	0.01
	88 Course Phy Sci	0.28	0.08	0.08	0.27
	33 SCIP Phys Roll	0.38	0.15	0.07	0.24
School Type Forced	15 Type J-Sr	0.07	0.01	0.01	0.07
	16 Type Sr	0.19	0.03	0.03	-0.18
	17 Type Jr	0.21	0.05	0.01	0.19
	33 SCIP Phys Roll	0.35	0.12	0.07	0.24
	88 Course Phy Sci	0.43	0.18	0.06	0.27
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.01	0.01	0.07
	16 Type Sr	0.19	0.03	0.03	-0.18
	17 Type Jr	0.21	0.05	0.01	0.19
	34 Tot Roll	0.22	0.05	0.00	0.01
	33 SCIP Phys Roll	0.35	0.12	0.07	0.24
	88 Course Phy Sci	0.43	0.18	0.06	0.27

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	13 Roll Phy Sci	0.70	0.49	0.49	0.70
	30 SCIP ES Roll	0.76	0.57	0.08	0.48
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	-0.02
	13 Roll Phy Sci	0.70	0.49	0.49	0.70
	30 SCIP ES Roll	0.76	0.57	0.08	0.48
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.34	0.11	0.11	-0.30
	17 Type Jr	0.37	0.14	0.02	0.37
	13 Roll Phy Sci	0.70	0.49	0.35	0.70
	30 SCIP ES Roll	0.76	0.57	0.09	0.48
	57 Auto Tut	0.79	0.62	0.05	-0.03
	68 Inservice	0.82	0.67	0.05	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.34	0.11	0.11	-0.30
	17 Type Jr	0.37	0.14	0.02	0.37
	34 Tot Roll	0.38	0.14	0.01	-0.02
	13 Roll Phy Sci	0.70	0.49	0.34	0.70
	30 SCIP ES Roll	0.76	0.57	0.09	0.48
	57 Auto Tut	0.79	0.62	0.05	-0.03
	68 Inservice	0.82	0.67	0.05	0.22

TABLE 14 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	30 SCIP ES Roll	0.54	0.29	0.29	0.54
	17 Type Jr	0.63	0.40	0.11	0.51
	26 Teach Sci M	0.67	0.45	0.05	0.37
	35 CAE	0.71	0.50	0.05	0.13
Total Enroll. Forced	34 Tot Roll	0.12	0.01	0.01	0.12
	30 SCIP ES Roll	0.54	0.29	0.28	0.54
	28 Teach Sci	0.64	0.41	0.12	0.32
	17 Type Jr	0.69	0.47	0.07	0.51
School Type Forced	15 Type J-Sr	0.14	0.02	0.02	0.14
	16 Type Sr	0.51	0.26	0.24	-0.35
	17 Type Jr	0.52	0.27	0.01	0.51
	30 SCIP ES Roll	0.64	0.40	0.13	0.54
	26 Teach Sci M	0.68	0.46	0.06	0.37
School Type & Total Enroll. Forced	15 Type J-Sr	0.14	0.02	0.02	-0.14
	16 Type Sr	0.51	0.26	0.24	-0.35
	17 Type Jr	0.52	0.27	0.01	0.51
	34 Tot Roll	0.53	0.28	0.01	0.12
	26 Teach Sci M	0.64	0.42	0.13	0.37
	30 SCIP ES Roll	0.71	0.50	0.09	0.54

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.29	0.08	0.08	-0.29
	88 Course Phy Sci	0.36	0.13	0.05	0.28
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	48 Lect Disc	0.31	0.09	0.08	-0.29
	88 Course Phy Sci	0.38	0.14	0.05	0.28
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.21	0.04	0.04	-0.15
	17 Type Jr	0.24	0.06	0.01	0.24
	52 Ind Lab	0.35	0.12	0.06	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.21	0.04	0.04	-0.15
	17 Type Jr	0.24	0.06	0.01	0.24
	34 Tot Roll	0.28	0.08	0.02	0.11
	48 Lect Disc	0.37	0.14	0.06	-0.29

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.24	0.06	0.06	0.24
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	88 Course Phy Sci	0.26	0.07	0.[illegible]	0.24
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.20	0.04	0.04	-0.14
	17 Type Jr	0.22	0.05	0.01	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.20	0.04	0.04	-0.14
	17 Type Jr	0.22	0.05	0.01	0.22
	34 Tot Roll	0.24	0.06	0.01	0.06

Earth Science

Two variables were used as indicators of the use of Science Course Improvement Projects in earth science courses. These variables were:

> Teaching Experience Using Earth Science Science Course Improvement Project Materials.
>
> Enrollments in Earth Science Courses Using Science Course Improvement Project Materials.

The mean values for these variables are reported in Tables 15 and 16. The mean values in Table 15 indicate that from 2 percent in the Southwest to 9 percent in the Rocky Mountains of the responding teachers had taught earth science using SCIP materials. The mean enrollment in earth science courses using SCIP materials ranged from a low of 8.86 students per school in the Farwest to a high of 38.06 students per school in the Plains region.

TABLE 15

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHING EXPERIENCE USING EARTH SCIENCE SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.03	0.03	0.04	0.04	0.02	0.09	0.05	0.04	0.04
S.D.	0.17	0.18	0.19	0.19	0.15	0.29	0.23	0.21	0.19
N	459	314	130	435	182	85	225	363	2193

[a] yes = 1, no = 0

TABLE 16

MEANS AND STANDARD DEVIATIONS FOR ENROLLMENTS IN EARTH SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	18.36	8.86	20.07	19.85	14.65	28.58	38.06	13.42	18.69
S.D.	60.04	33.26	69.61	77.54	62.67	71.17	105.96	64.70	69.33
N	459	314	130	435	182	85	225	363	2193

These two variables correlated positively at the ($\alpha \leq 0.001$) level with each other in at least four of the eight regions. In addition, the variable, Teaching Experience Using Earth Science SCIP Materials, correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

> +Teacher hours of earth science credits
> +Earth Science Course Chosen for This Survey

The variable, Enrollments in Earth Science Courses Using SCIP Materials correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

+General enrollments in 9th grade and in earth science
+Use of SCIP
+Enrollments in SCIP Physical Science and SCIP Chemistry
+Number of Teachers
+Earth Science Course Chosen for This Survey

The regression analyses in Table 17 indicated that the best predictor for whether or not a teacher has taught earth science using SCIP materials is the number of earth science credits the teacher had. This was a significant factor in all regions except the Farwest and the Plains.

The enrollments in SCIP earth science courses were consistently best predicted by total physical science enrollments as reported in Table 18. This is as expected from the previous variables. All regions except the Farwest resulted in the enrollments in other SCIP materials as significant predictors. In some regions it was physics, some biology, some physical science, and some chemistry. This would indicate that schools using SCIP in earth science tend to use SCIP in some other area of science also.

Biology

Two variables were used as indicators of the use of SCIP in biology courses. These variables were:

Teaching Experience Using Biology Science Course Improvement Project Materials.

Enrollments in Biology Courses Using Science Course Improvement Project Materials.

The biology course SCIP materials included BSCS: Blue, Green, Yellow, P & P and II.

The mean values for these variables are reported in Tables 19 and 20. These means indicate a range of 13 to 27 percent of the teachers have taught biology using SCIP materials. The percentages were relatively consistent from region to region. The mean Enrollments in Biological Science Courses Using SCIP Materials ranged rom a low of 69.81 per school in the Southwest to a high of 162.49 in the Farwest. The variations in these enrollments were related to differences in Total Student Enrollments in most cases.

These two variables correlated positively at the ($\alpha \leq 0.001$) level with each other in at least four of the eight regions. In addition, the variable, Teaching Experience Using Biology Science Course Improvement Project Materials, correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following variables:

+Use of SCIP
+Teacher's college credits in biological sciences
+Biology Course Chosen for This Survey
+Tenth grade level course chosen for this survey

TABLE 17

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHING EXPERIENCE USING EARTH SCIENCE, SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	86 Course Earth	0.42	0.18	0.18	0.42
	76 Hrs Earth	0.49	0.24	0.06	0.39
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	-0.02
	86 Course Earth	0.43	0.18	0.18	0.42
	76 Hrs Earth	0.49	0.24	0.06	0.39
	30 SCIP ES Roll	0.54	0.29	0.05	0.31
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.17	0.03	0.02	-0.10
	17 Type Jr	0.19	0.03	0.01	0.11
	86 Course Earth	0.46	0.21	0.17	0.42
	76 Hrs Earth	0.52	0.27	0.06	0.39
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.17	0.03	0.02	-0.10
	17 Type Jr	0.19	0.03	0.01	0.11
	34 Tot Roll	0.19	0.03	0.00	-0.02
	86 Course Earth	0.46	0.21	0.17	0.42
	76 Hrs Earth	0.52	0.27	0.06	0.39
	30 SCIP ES Roll	0.57	0.32	0.05	0.31

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	76 Hrs Earth	0.37	0.13	0.13	0.37
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	0.00
	76 Hrs Earth	0.37	0.13	0.13	0.37
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.10	0.01	0.00	0.01
	17 Type Jr	0.11	0.01	0.00	0.03
	76 Hrs Earth	0.38	0.14	0.13	0.37
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.10	0.01	0.00	0.01
	17 Type Jr	0.11	0.01	0.00	0.03
	34 Tot Roll	0.11	0.01	0.00	0.00
	76 Hrs Earth	0.38	0.14	0.13	0.37

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	30 SCIP ES Roll	0.25	0.06	0.06	0.25
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	-0.03
	30 SCIP ES Roll	0.25	0.06	0.06	0.25
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.15	0.02	0.02	-0.14
	17 Type Jr	0.17	0.03	0.01	0.11
	30 SCIP ES Roll	0.30	0.09	0.06	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.15	0.02	0.02	-0.14
	17 Type Jr	0.17	0.03	0.01	0.11
	34 Tot Roll	0.17	0.03	0.00	-0.03
	30 SCIP ES Roll	0.30	0.09	0.06	0.25

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	76 Hrs Earth	0.23	0.05	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.16	0.03	0.03	0.16
	76 Hrs Earth	0.28	0.08	0.05	0.23
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.10	0.01	0.01	-0.06
	17 Type Jr	0.11	0.01	0.00	0.10
	41 NSF Summer	0.25	0.06	0.05	0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.10	0.01	0.01	-0.06
	17 Type Jr	0.11	0.01	0.00	0.10
	34 Tot Roll	0.20	0.04	0.03	0.16
	41 NSF Summer	0.30	0.09	0.05	0.21

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	76 Hrs Earth	0.42	0.18	0.18	0.42
	14 Roll Health	0.51	0.26	0.09	0.29
Total Enroll. Forced	34 Tot Roll	0.10	0.01	0.01	-0.10
	76 Hrs Earth	0.43	0.19	0.18	0.42
	14 Roll Health	0.53	0.28	0.09	0.29
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.18	0.03	0.02	-0.18
	17 Type Jr	0.19	0.04	0.00	0.13
	76 Hrs Earth	0.43	0.19	0.15	0.42
	14 Roll Health	0.53	0.28	0.09	0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.18	0.03	0.02	-0.18
	17 Type Jr	0.19	0.04	0.00	0.13
	34 Tot Roll	0.20	0.04	0.00	-0.10
	76 Hrs Earth	0.44	0.19	0.15	0.42
	14 Roll Health	0.54	0.29	0.09	0.29

Rocky Mountains (N = 85

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	76 Hrs Earth	0.53	0.29	0.29	0.53
	56 Prog Inst	0.63	0.39	0.11	0.39
	86 Course Earth	0.68	0.46	0.07	0.43
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	-0.02
	76 Hrs Earth	0.53	0.29	0.29	0.53
	56 Prog Inst	0.63	0.40	0.11	0.39
	86 Course Earth	0.69	0.47	0.07	0.43
School Type Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.33	0.11	0.10	-0.27
	17 Type Jr	0.35	0.12	0.01	0.28
	76 Hrs Earth	0.56	0.31	0.19	0.53
	56 Prog Inst	0.66	0.43	0.12	0.39
	86 Course Earth	0.71	0.50	0.07	0.43
School Type & Total Enroll. Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.33	0.11	0.10	-0.27
	17 Type Jr	0.35	0.12	0.01	0.28
	34 Tot Roll	0.35	0.13	0.01	-0.02
	76 Hrs Earth	0.56	0.32	0.19	0.53
	56 Prog Inst	0.66	0.43	0.12	0.39
	86 Course Earth	0.71	0.50	0.07	0.43

TABLE 17 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	86 Course Earth	0.37	0.13	0.13	0.37
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	86 Course Earth	0.37	0.13	0.13	0.37
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.27	0.07	0.07	-0.20
	17 Type Jr	0.28	0.08	0.00	0.23
	86 Course Earth	0.40	0.16	0.08	0.37
	83 SCIP PS TE	0.45	0.20	0.04	-0.11
	30 SCIP ES Roll	0.50	0.25	0.05	0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.27	0.07	0.07	-0.20
	17 Type Jr	0.28	0.08	0.00	0.23
	34 Tot Roll	0.28	0.08	0.00	-0.01
	86 Course Earth	0.40	0.16	0.08	0.37
	83 SCIP PS TE	0.45	0.20	0.04	-0.11
	30 SCIP ES Roll	0.50	0.25	0.05	0.28

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	86 Course Earth	0.38	0.15	0.15	0.38
	76 Hrs Earth	0.44	0.19	0.05	0.31
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	86 Course Earth	0.38	0.15	0.15	0.38
	30 SCIP ES Roll	0.44	0.20	0.05	0.25
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.16	0.03	0.03	-0.13
	17 Type Jr	0.16	0.03	0.00	0.15
	86 Course Earth	0.39	0.15	0.13	0.38
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.16	0.03	0.03	-0.13
	17 Type Jr	0.16	0.03	0.00	0.15
	34 Tot Roll	0.16	0.03	0.00	-0.01
	86 Course Earth	0.39	0.15	0.13	0.38
	30 SCIP ES Roll	0.45	0.20	0.05	0.25

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	76 Hrs Earth	0.33	0.11	0.11	0.33
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	-0.02
	76 Hrs Earth	0.33	0.11	0.11	0.33
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.16	0.03	0.02	-0.12
	17 Type Jr	0.16	0.03	0.00	0.14
	76 Hrs Earth	0.35	0.12	0.10	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.16	0.03	0.02	-0.12
	17 Type Jr	0.16	0.03	0.00	0.14
	34 Tot Roll	0.17	0.03	0.00	-0.02
	76 Hrs Earth	0.35	0.12	0.10	0.33

TABLE 18

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF ENROLLMENTS IN EARTH SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	11 Roll Earth	0.43	0.18	0.18	0.43
	33 SCIP Phys Roll	0.52	0.27	0.09	0.35
Total Enroll. Forced	34 Tot Roll	0.25	0.06	0.06	0.25
	11 Roll Earth	0.46	0.21	0.15	0.43
	33 SCIP Phys Roll	0.52	0.27	0.06	0.35
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.[illegible]
	16 Type Sr	0.10	0.01	0.00	0.[illegible]
	17 Type Jr	0.12	0.01	0.00	0.07
	11 Roll Earth	0.43	0.19	0.17	0.43
	33 SCIP Phys Roll	0.52	0.27	0.08	0.35
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.10	0.01	0.00	0.02
	17 Type Jr	0.12	0.01	0.00	0.07
	34 Tot Roll	0.27	0.08	0.06	0.25
	11 Roll Earth	0.46	0.21	0.13	0.43
	33 SCIP Phys Roll	0.52	0.27	0.06	0.35

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	11 Roll Earth	0.30	0.09	0.09	0.30
Total Enroll. Forced	34 Tot Roll	0.10	0.01	0.01	0.10
	11 Roll Earth	0.31	0.10	0.09	0.30
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.04	0.00	0.00	0.01
	17 Type Jr	0.08	0.01	0.00	0.00
	11 Roll Earth	0.32	0.10	0.10	0.30
	29 SCIP PS Roll	0.38	0.15	0.05	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.04	0.00	0.00	0.01
	17 Type Jr	0.08	0.01	0.00	0.00
	34 Tot Roll	0.13	0.02	0.01	0.10
	11 Roll Earth	0.32	0.10	0.09	0.30
	29 SCIP PS Roll	0.39	0.15	0.05	0.22

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	11 Roll Earth	0.45	0.21	0.21	0.45
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	11 Roll Earth	0.46	0.21	0.21	0.45
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.04	0.00	0.00	0.02
	11 Roll Earth	0.47	0.22	0.22	0.45
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.04	0.00	0.00	0.02
	34 Tot Roll	0.05	0.00	0.00	0.03
	11 Roll Earth	0.47	0.22	0.22	0.45

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32 SCIP Chem Roll	0.31	0.09	0.09	0.31
	11 Roll Earth	0.40	0.16	0.07	0.26
Total Enroll. Forced	34 Tot Roll	0.15	0.02	0.02	0.15
	32 SCIP Chem Roll	0.31	0.10	0.08	0.31
	11 Roll Earth	0.40	0.16	0.07	0.26
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.07	0.01	0.00	0.04
	32 SCIP Chem Roll	0.32	0.10	0.10	0.31
	11 Roll Earth	0.41	0.17	0.07	0.26
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.07	0.01	0.00	0.04
	34 Tot Roll	0.16	0.03	0.02	0.15
	32 SCIP Chem Roll	0.33	0.11	0.08	0.31
	11 Roll Earth	0.41	0.17	0.06	0.26

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	31 SCIP Bio Roll	0.50	0.25	0.25	0.50
	40 NSF Inserv	0.56	0.32	0.07	0.44
Total Enroll. Forced	34 Tot Roll	0.34	0.11	0.11	0.34
	31 SCIP Bio Roll	0.52	0.27	0.16	0.50
	40 NSF Inserv	0.57	0.33	0.06	0.44
	35 CAE	0.63	0.39	0.06	0.25
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.05	0.00	0.00	-0.04
	17 Type Jr	0.21	0.04	0.04	-0.06
	31 SCIP Bio Roll	0.55	0.30	0.26	0.50
	40 NSF Inserv	0.62	0.38	0.08	0.44
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.05	0.00	0.00	-0.04
	17 Type Jr	0.21	0.04	0.04	-0.06
	34 Tot Roll	0.42	0.17	0.13	0.34
	31 SCIP Bio Roll	0.58	0.33	0.16	0.50
	40 NSF Inserv	0.63	0.40	0.07	0.44

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	29 SCIP PS Roll	0.48	0.23	0.23	0.48
	57 Auto Tut	0.56	0.31	0.08	0.27
	63 Interest	0.60	0.36	0.05	-0.11
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	0.00
	29 SCIP PS Roll	0.48	0.23	0.23	0.48
	57 Auto Tut	0.56	0.31	0.08	0.27
	63 Interest	0.60	0.36	0.05	-0.11
School Type Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.26	0.07	0.05	-0.19
	17 Type Jr	0.28	0.08	0.01	0.28
	29 SCIP PS Roll	0.49	0.24	0.17	0.48
	57 Auto Tut	0.57	0.33	0.08	0.27
	63 Interest	0.61	0.38	0.05	-0.11
School Type & Total Enroll. Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.26	0.07	0.05	-0.19
	17 Type Jr	0.28	0.08	0.01	0.28
	34 Tot Roll	0.28	0.08	0.00	0.00
	29 SCIP PS Roll	0.49	0.24	0.16	0.48
	57 Auto Tut	0.57	0.33	0.09	0.27
	63 Interest	0.62	0.38	0.05	-0.11
	13 Roll Phy Sci	0.65	0.43	0.04	0.29
	68 Inservice	0.70	0.49	0.06	0.01

TABLE 18 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	29 SCIP PS Roll	0.54	0.29	0.29	0.54
	76 Res Earth	0.59	0.34	0.05	0.36
Total Enroll. Forced	34 Tot Roll	0.17	0.03	0.03	0.17
	29 SCIP PS Roll	0.55	0.30	0.27	0.54
	09 Roll Chem	0.60	0.36	0.06	-0.13
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.38	0.15	0.14	-0.27
	17 Type Jr	0.39	0.15	0.00	0.38
	29 SCIP PS Roll	0.55	0.31	0.16	0.54
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.38	0.15	0.14	-0.27
	17 Type Jr	0.39	0.15	0.00	0.38
	34 Tot Roll	0.43	0.18	0.03	0.17
	29 SCIP PS Roll	0.57	0.32	0.14	0.54
	09 Roll Chem	0.61	0.37	0.05	-0.13

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	11 Roll Earth	0.28	0.08	0.08	0.28
	31 SCIP Bio Roll	0.36	0.13	[illegible]	0.24
Total Enroll. Forced	34 Tot Roll	0.22	0.05	[illegible]	0.22
	11 Roll Earth	0.33	0.11	[illegible]	0.28
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.04	0.00	0.00	-0.03
	17 Type Jr	0.09	0.01	0.01	0.08
	11 Roll Earth	0.29	0.08	0.08	0.28
	31 SCIP Bio Roll	0.37	0.14	0.05	0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.04	0.00	0.00	-0.03
	17 Type Jr	0.09	0.01	0.01	0.08
	34 Tot Roll	0.25	0.06	0.05	0.22
	11 Roll Earth	0.33	0.11	0.05	0.28

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	11 Roll Earth	0.33	0.11	0.11	0.33
Total Enroll. Forced	34 Tot Roll	0.13	0.02	0.02	0.13
	11 Roll Earth	0.34	0.12	0.10	0.33
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.11	0.01	0.01	-0.07
	17 Type Jr	0.11	0.01	0.00	0.11
	11 Roll Earth	0.33	0.11	0.10	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.11	0.01	0.01	-0.07
	17 Type Jr	0.11	0.01	0.00	0.11
	34 Tot Roll	0.19	0.04	0.02	0.13
	11 Roll Earth	0.35	0.12	0.08	0.33

TABLE 19

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHING EXPERIENCE USING BIOLOGY SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.23	0.27	0.23	0.14	0.19	0.14	0.19	0.13	0.19
S.D.	0.42	0.44	0.42	0.35	0.39	0.35	0.39	0.34	0.39
N	439	314	130	435	182	85	225	363	2193

[a] yes = 1, no = 0

TABLE 20

MEANS AND STANDARD DEVIATIONS FOR ENROLLMENTS IN BIOLOGICAL SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	125.59	162.49	126.29	96.03	69.81	102.48	99.48	81.97	106.32
S.D.	218.09	210.50	171.20	383.43	165.16	156.18	474.18	141.35	373.17
N	439	314	130	435	182	85	225	363	2193

The variable, Enrollments in Biological Science Courses Using SCIP Materials correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

+Enrollments in grades 9 thru 12
+Enrollments in biology, chemistry, and physics
+Enrollments in courses using biology, chemistry, physics, and earth science SCIP materials
+Number of Teachers
+Computer terminal available
+SCIP biology course at 10th-12th grade selected for this survey

The regression analyses in Table 21 indicates that the best predictors for Teaching Experience Using Biology SCIP Materials were Biology Course Chosen for This Survey and Teacher's College Biological Science Credits. The college credits in biology is the more interesting of these two variables. In three of the eight regions and the total, this variable was the best predictor, accounting for 9 to 23 percent of the variance in experience with biology SCIP materials. In three of the remaining regions college credits in biology was the second predictor accounting for at least 5 percent of the remaining variance in each case. The Rocky Mountains and Mideast regions did not result in college credits in biology as a predictor of experience with SCIP materials for teaching biology. The partialling out of Total Student Enrollment and School Type did not affect the relationships between these variables.

The enrollments in SCIP biology courses were best predicted by enrollments in chemistry, physics, and earth science courses where SCIP materials were in use.

In three regions, Great Lakes, Farwest, and Southeast, the general enrollment for biology was a predictor for SCIP biology enrollment. This did not change after Total Student Enrollment was partialled out in two of the three regions. These results are given in Table 22.

TABLE 21

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHING EXPERIENCE USING BIOLOGY SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.48	0.23	0.23	0.48
	74 Hrs Bio	0.55	0.30	0.06	0.48
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	84 Course Bio	0.49	0.24	0.23	0.48
	74 Hrs Bio	0.55	0.30	0.06	0.48
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.07	0.00	0.00	0.06
	17 Type Jr	0.07	0.00	0.00	-0.06
	84 Course Bio	0.49	0.24	0.23	0.48
	74 Hrs Bio	0.55	0.30	0.06	0.48
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.07	0.00	0.00	0.06
	17 Type Jr	0.07	0.00	0.00	-0.06
	34 Tot Roll	0.08	0.01	0.00	0.06
	84 Course Bio	0.49	0.24	0.23	0.48
	74 Hrs Bio	0.55	0.30	0.06	0.48

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.43	0.18	0.18	0.43
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	84 Course Bio	0.43	0.19	0.18	0.43
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.02	0.02	0.10
	17 Type Jr	0.12	0.02	0.00	-0.12
	84 Course Bio	0.44	0.19	0.17	0.43
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.02	0.02	0.10
	17 Type Jr	0.12	0.02	0.00	-0.12
	34 Tot Roll	0.13	0.02	0.00	0.05
	84 Course Bio	0.44	0.19	0.17	0.43

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.54	0.30	0.30	0.54
	74 Hrs Bio	0.59	0.34	0.05	0.45
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	84 Course Bio	0.55	0.30	0.29	0.54
	74 Hrs Bio	0.59	0.35	0.05	0.45
School Type Forced	15 Type J-Sr	0.07	0.01	0.01	0.07
	16 Type Sr	0.17	0.03	0.02	0.13
	17 Type Jr	0.19	0.04	0.01	-0.18
	84 Course Bio	0.55	0.31	0.27	0.54
	74 Hrs Bio	0.60	0.36	0.05	0.45
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.01	0.01	0.07
	16 Type Sr	0.17	0.03	0.02	0.13
	17 Type Jr	0.19	0.04	0.01	-0.18
	34 Tot Roll	0.21	0.04	0.01	0.11
	84 Course Bio	0.56	0.31	0.27	0.54
	74 Hrs Bio	0.60	0.36	0.05	0.45

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	74 Hrs Bio	0.31	0.09	0.09	0.31
	31 SCIP Bio Roll	0.40	0.16	0.07	0.31
Total Enroll. Forced	34 Tot Roll	0.27	0.07	0.07	0.27
	74 Hrs Bio	0.38	0.14	0.07	0.31
School Type Forced	15 Type J-Sr	0.14	0.02	0.02	-0.14
	16 Type Sr	0.19	0.03	0.02	0.17
	17 Type Jr	0.20	0.04	0.01	-0.12
	74 Hrs Bio	0.36	0.13	0.09	0.31
	31 SCIP Bio Roll	0.43	0.18	0.06	0.31
School Type & Total Enroll. Forced	15 Type J-Sr	0.14	0.02	0.02	-0.14
	16 Type Sr	0.19	0.03	0.02	0.17
	17 Type Jr	0.20	0.04	0.01	-0.12
	34 Tot Roll	0.30	0.09	0.05	0.27
	74 Hrs Bio	0.40	0.16	0.07	0.31

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.32	0.27	0.27	0.52
	74 Hrs Bio	0.59	0.35	0.07	0.45
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	84 Course Bio	0.52	0.27	0.27	0.52
	74 Hrs Bio	0.59	0.35	0.07	0.45
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.13	0.02	0.00	0.08
	17 Type Jr	0.21	0.04	0.03	-0.05
	84 Course Bio	0.57	0.33	0.28	0.52
	74 Hrs Bio	0.62	0.39	0.06	0.45
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.13	0.02	0.00	0.08
	17 Type Jr	0.21	0.04	0.03	-0.05
	34 Tot Roll	0.22	0.05	0.00	0.05
	84 Course Bio	0.57	0.33	0.28	0.52
	74 Hrs Bio	0.62	0.39	0.06	0.45

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.38	0.14	0.14	0.38
	39 Pursuing	0.48	0.23	0.09	0.29
	12 Roll Geol	0.54	0.30	0.06	0.36
Total Enroll. Forced	34 Tot Roll	0.08	0.01	0.01	0.08
	10 Roll Physics	0.40	0.16	0.15	0.38
	39 Pursuing	0.52	0.27	0.11	0.29
	11 Roll Earth	0.57	0.33	0.06	-0.25
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.26	0.07	0.06	0.21
	17 Type Jr	0.26	0.07	0.00	-0.23
	51 Ind Study	0.41	0.16	0.10	0.27
	33 SCIP Phys Roll	0.50	0.25	0.08	0.38
	39 Pursuing	0.55	0.31	0.06	0.29
	11 Roll Earth	0.60	0.35	0.05	-0.25
	10 Roll Physics	0.63	0.40	0.05	0.38
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.26	0.07	0.06	0.21
	17 Type Jr	0.26	0.07	0.00	-0.23
	34 Tot Roll	0.26	0.07	0.00	0.08
	10 Roll Physics	0.42	0.17	0.11	0.38
	39 Pursuing	0.53	0.28	0.10	0.29
	11 Roll Earth	0.59	0.35	0.07	-0.25
	51 Ind Study	0.63	0.40	0.05	0.27
	46 Class #	0.66	0.44	0.04	0.11
	20 Sci Fair	0.70	0.49	0.05	-0.07

TABLE 21 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	74 Hrs Bio	0.48	0.23	0.23	0.48
	17 Type Jr	0.53	0.28	0.05	-0.29
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	0.00
	74 Hrs Bio	0.48	0.23	0.23	0.48
	17 Type Jr	0.53	0.28	0.05	-0.29
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.28	0.08	0.06	0.15
	17 Type Jr	0.29	0.09	0.01	-0.29
	74 Hrs Bio	0.53	0.28	0.20	0.48
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.28	0.08	0.06	0.15
	17 Type Jr	0.29	0.09	0.01	-0.29
	34 Tot Roll	0.29	0.09	0.00	0.00
	74 Hrs Bio	0.53	0.28	0.20	0.48

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	74 Hrs Bio	0.35	0.12	0.12	0.35
	84 Course Bio	0.42	0.18	0.05	0.32
Total Enroll. Forced	34 Tot Roll	0.19	0.03	0.03	0.19
	74 Hrs Bio	0.37	0.14	0.10	0.35
	84 Course Bio	0.44	0.19	0.05	0.32
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.19	0.03	0.03	0.19
	17 Type Jr	0.19	0.03	0.00	-0.11
	74 Hrs Bio	0.39	0.15	0.12	0.35
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.19	0.03	0.03	0.19
	17 Type Jr	0.19	0.03	0.00	-0.11
	34 Tot Roll	0.24	0.06	0.02	0.19
	74 Hrs Bio	0.40	0.16	0.10	0.35

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	74 Hrs Bio	0.42	0.17	0.17	0.42
	84 Course Bio	0.49	0.24	0.07	0.42
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	84 Course Bio	0.43	0.18	0.17	0.42
	74 Hrs Bio	0.50	0.25	0.06	0.42
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.16	0.03	0.02	0.15
	17 Type Jr	0.16	0.03	0.00	-0.15
	74 Hrs Bio	0.44	0.19	0.17	0.42
	84 Course Bio	0.50	0.25	0.06	0.42
School Type & Total Enroll. Forced	15 Type J-Sr	0.30	0.00	0.00	-0.03
	16 Type Sr	0.16	0.03	0.02	0.15
	17 Type Jr	0.16	0.03	0.00	-0.15
	34 Tot Roll	0.18	0.03	0.00	0.11
	74 Hrs Bio	0.44	0.19	0.16	0.42
	84 Course Bio	0.50	0.25	0.06	0.42

TABLE 22

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF ENROLLMENTS IN BIOLOGICAL SCIENCE COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	28	Teach Sci	0.59	0.35	0.35	0.59
	32	SCIP Chem Roll	0.64	0.41	0.06	0.51
Total Enroll. Forced	34	Tot Roll	0.54	0.29	0.29	0.54
	32	SCIP Chem Roll	0.60	0.36	0.07	0.51
	08	Roll Bio	0.65	0.42	0.06	0.57
School Type Forced	15	Type J-Sr	0.15	0.02	0.02	-0.15
	16	Type Sr	0.24	0.06	0.03	0.23
	17	Type Jr	0.24	0.06	0.00	-0.14
	28	Teach Sci	0.60	0.36	0.31	0.59
	32	SCIP Chem Roll	0.64	0.41	0.05	0.51
School Type & Total Enroll. Forced	15	Type J-Sr	0.15	0.02	0.02	-0.15
	16	Type Sr	0.24	0.06	0.03	0.23
	17	Type Jr	0.24	0.06	0.00	-0.14
	34	Tot Roll	0.54	0.30	0.24	0.54
	28	Teach Sci	0.60	0.36	0.07	0.59
	32	SCIP Chem Roll	0.64	0.41	0.05	0.51

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None		——	——	——	——
Total Enroll. Forced	34	Tot Roll	0.07	0.00	0.00	0.07
School Type Forced	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.17	0.03	0.03	0.17
	17	Type Jr	0.18	0.03	0.00	-0.14
School Type & Total Enroll. Forced	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.17	0.03	0.03	0.17
	17	Type Jr	0.18	0.03	0.00	-0.14
	34	Tot Roll	0.18	0.03	0.00	0.07

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	08	Roll Bio	0.54	0.29	0.29	0.54
	32	SCIP Chem Roll	0.64	0.41	0.12	0.52
Total Enroll. Forced	34	Tot Roll	0.36	0.13	0.13	0.36
	08	Roll Bio	0.55	0.30	0.17	0.54
	32	SCIP Chem Roll	0.64	0.41	0.11	0.52
School Type Forced	15	Type J-Sr	0.10	0.01	0.01	-0.10
	16	Type Sr	0.35	0.12	0.11	0.35
	17	Type Jr	0.35	0.12	0.00	-0.32
	32	SCIP Chem Roll	0.55	0.31	0.18	0.52
	08	Roll Bio	0.64	0.41	0.11	0.54
School Type & Total Enroll. Forced	15	Type J-Sr	0.10	0.01	0.01	-0.10
	16	Type Sr	0.35	0.12	0.11	0.35
	17	Type Jr	0.35	0.12	0.00	-0.32
	34	Tot Roll	0.44	0.20	0.08	0.36
	32	SCIP Chem Roll	0.57	0.32	0.13	0.52
	08	Roll Bio	0.64	0.41	0.09	0.54

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33	SCIP Phys Roll	0.45	0.20	0.20	0.45
	32	SCIP Chem Roll	0.51	0.26	0.06	0.41
	34	Tot Roll	0.55	0.31	0.05	0.42
Total Enroll. Forced	34	Tot Roll	0.42	0.18	0.18	0.42
	32	SCIP Chem Roll	0.53	0.28	0.10	0.41
School Type Forced	15	Type J-Sr	0.11	0.01	0.01	-0.11
	16	Type Sr	0.24	0.06	0.05	0.24
	17	Type Jr	0.24	0.06	0.00	-0.19
	33	SCIP Phys Roll	0.47	0.22	0.16	0.45
	32	SCIP Chem Roll	0.52	0.27	0.05	0.41
	35	CAE	0.57	0.32	0.05	0.40
School Type & Total Enroll. Forced	15	Type J-Sr	0.11	0.01	0.01	-0.11
	16	Type Sr	0.24	0.06	0.05	0.24
	17	Type Jr	0.24	0.06	0.00	-0.19
	34	Tot Roll	0.45	0.20	0.14	0.42
	32	SCIP Chem Roll	0.54	0.29	0.09	0.41

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	25	Teach Sci Full	0.60	0.36	0.36	0.60
	32	SCIP Chem Roll	0.68	0.46	0.10	0.58
	30	SCIP ES Roll	0.72	0.52	0.05	0.50
Total Enroll. Forced	34	Tot Roll	0.42	0.18	0.18	0.42
	25	Teach Sci Full	0.62	0.39	0.21	0.60
	32	SCIP Chem Roll	0.70	0.49	0.10	0.58
	30	SCIP ES Roll	0.73	0.54	0.05	0.50
School Type Forced	15	Type J-Sr	0.06	0.00	0.00	-0.06
	16	Type Sr	0.11	0.01	0.01	0.10
	17	Type Jr	0.11	0.01	0.00	-0.07
	25	Teach Sci Full	0.60	0.36	0.35	0.60
	32	SCIP Chem Roll	0.68	0.47	0.10	0.58
	30	SCIP ES Roll	0.72	0.52	0.06	0.50
School Type & Total Enroll. Forced	15	Type J-Sr	0.06	0.00	0.00	-0.06
	16	Type Sr	0.11	0.01	0.01	0.10
	17	Type Jr	0.11	0.01	0.00	-0.07
	34	Tot Roll	0.42	0.18	0.17	0.42
	25	Teach Sci Full	0.62	0.39	0.21	0.60
	32	SCIP Chem Roll	0.70	0.49	0.10	0.58
	30	SCIP ES Roll	0.74	0.55	0.06	0.50

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32	SCIP Chem Roll	0.69	0.48	0.48	0.69
	16	Type Sr	0.79	0.62	0.14	0.67
Total Enroll. Forced	34	Tot Roll	0.42	0.18	0.18	0.42
	33	SCIP Phys Roll	0.72	0.51	0.34	0.69
	16	Type Sr	0.79	0.63	0.11	0.67
School Type Forced	15	Type J-Sr	0.16	0.03	0.03	-0.16
	16	Type Sr	0.67	0.45	0.42	0.67
	17	Type Jr	0.67	0.45	0.00	-0.52
	32	SCIP Chem Roll	0.79	0.62	0.18	0.69
School Type & Total Enroll. Forced	15	Type J-Sr	0.16	0.03	0.03	-0.16
	16	Type Sr	0.67	0.45	0.42	0.67
	17	Type Jr	0.67	0.45	0.00	-0.52
	34	Tot Roll	0.69	0.47	0.03	0.42
	33	SCIP Phys Roll	0.79	0.63	0.16	0.69

TABLE 22 Continued

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	08 Roll Bio	0.55	0.30	0.30	0.55
	33 SCIP Phys Roll	0.65	0.42	0.12	0.54
Total Enroll. Forced	34 Tot Roll	0.54	0.29	0.29	0.54
	33 SCIP Phys Roll	0.63	0.40	0.11	0.54
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.31	0.10	0.10	0.27
	17 Type Jr	0.31	0.10	0.00	-0.24
	34 Tot Roll	0.58	0.33	0.24	0.54
	33 SCIP Phys Roll	0.65	0.43	0.09	0.54
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.31	0.10	0.10	0.27
	17 Type Jr	0.31	0.10	0.00	-0.24
	34 Tot Roll	0.58	0.33	0.24	0.54
	33 SCIP Phys Roll	0.65	0.43	0.09	0.54

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.36	0.13	0.13	0.36
	08 Roll Bio	0.42	0.18	0.05	0.32
Total Enroll. Forced	34 Tot Roll	0.30	0.09	0.09	0.30
	33 SCIP Phys Roll	0.41	0.17	0.08	0.36
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.23	0.05	0.04	0.23
	17 Type Jr	0.23	0.05	0.00	-0.17
	33 SCIP Phys Roll	0.39	0.15	0.10	0.36
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.23	0.05	0.04	0.23
	17 Type Jr	0.23	0.05	0.00	-0.17
	34 Tot Roll	0.33	0.11	0.06	0.30
	33 SCIP Phys Roll	0.42	0.18	0.07	0.36

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.46	0.21	0.21	0.46
	32 SCIP Chem Roll	0.52	0.27	0.06	0.16
Total Enroll. Forced	34 Tot Roll	0.28	0.08	0.08	0.28
	33 SCIP Phys Roll	0.48	0.23	0.15	0.46
	10 Roll Physics	0.56	0.31	0.08	0.09
	14 Roll Health	0.60	0.36	0.05	-0.02
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.18	0.03	0.03	0.18
	17 Type Jr	0.18	0.03	0.00	-0.12
	33 SCIP Phys Roll	0.48	0.23	0.20	0.46
	32 SCIP Chem Roll	0.54	0.29	0.07	0.16
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.18	0.03	0.03	0.18
	17 Type Jr	0.18	0.03	0.00	-0.12
	34 Tot Roll	0.32	0.10	0.07	0.28
	33 SCIP Phys Roll	0.49	0.24	0.14	0.46
	10 Roll Physics	0.57	0.33	0.09	0.08

This suggests that the relationship was not just due to school size. In those schools where biology was more popular, or in some way emphasized, the SCIP biology materials were more likely to be in use.

The relationship between numbers of college credits in biology and experience with SCIP biology materials suggests that those teachers with more biology coursework tend to use SCIP biology materials. If these two relationships are considered together it might be hypothesized that those schools with a relatively high number of biology students relative to the school's total enrollment tend to use SCIP biology materials and the teachers of these courses tend to have more extensive biology course backgrounds.

Chemistry

The two variables used as indicators of the use of SCIP in chemistry courses were:

> Teaching Experience Using Chemistry Science Course Improvement Project Materials.
>
> Enrollments in Chemistry Courses Using Science Course Improvement Project Materials.

The chemistry course SCIP materials referred to in these two variables include CHEMS and CBA.

The mean values for these variables are reported in Tables 23 and 24. These means indicate that a range of 3 to 15 percent have taught chemistry using SCIP materials. The teachers in the Southwest and the Southeast reported 3 percent and 5 percent having used SCIP materials for teaching chemistry while the Farwest region teachers had 15 percent reporting experience with these chemistry materials.

TABLE 23

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHING EXPERIENCE USING CHEMISTRY SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	[illegible]	0.15	0.12	0.08	0.03	0.11	0.10	0.05	0.09
S.D.	[illegible]	0.36	0.32	0.27	0.18	0.31	0.30	0.21	0.28
N	459	314	130	435	182	85	275	363	2193

[a] yes = 1, no = 0

TABLE 24

MEANS AND STANDARD DEVIATIONS FOR ENROLLMENTS IN CHEMISTRY COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	38.44	48.66	48.94	23.90	15.81	22.49	28.93	14.13	30.14
S.D.	77.36	70.14	89.38	60.62	51.13	50.44	93.80	35.36	70.88
N	459	314	130	435	182	85	225	363	2193

The mean enrollments in chemistry courses using SCIP materials ranged from a low of 14.12 in the Southeast region to a high of 48.94 in the New England region. The regions reporting the highest enrollment figures also reported the greatest percentage of teachers with experience using the SCIP materials. These two variables showed a positive correlation ($\alpha \leq 0.001$) with each other in at least four of the eight regions. In addition, the variable, Teaching Experience Using Chemistry Science Course Improvement Project Materials, correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

+General enrollments in chemistry
+School Type (Senior High)
+Teacher's College Physical Science Credits

The variable, Enrollments in Chemistry Courses Using SCIP Materials correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

+Enrollments in 10th-12th grade science
+School Type (Senior High)
+Use of SCIP
+Enrollments in science courses using SCIP materials
+Number of Teachers
+Computer terminal available
+Ham radio available
+Teacher selected for survey teacher SCIP chemistry from 10th-12th grade

The regression analyses in Table 25 indicates that the best predictor of Teaching Experience Using Chemistry SCIP Materials was whether or not the selected class for this survey was a chemistry course. The enrollments in SCIP chemistry courses as reported in the regression analyses in Table 26 were best predicted by enrollments in other science courses using SCIP materials. The enrollment in SCIP physics courses was the best predictor in six of the eight regions. SCIP physics enrollments did not enter as a predictor in the New England or the Mideast regions. In these regions, the enrollments in SCIP biology and general enrollments for chemistry were the best predictors. Generally, the predictors were not changed by partialling out Total Student Enrollment and School Type.

Physics

The two variables used as indicators of the use of SCIP in physics courses were:

Teaching Experience Using Physics Science Course Improvement Project Materials.

Enrollments in Physics Courses Using Science Course Improvement Project Materials.

The physics course SCIP materials referred to in these two variables include PSSC and HPP.

TABLE 25

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHING EXPERIENCE USING CHEMISTRY SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.53	0.28	0.28	0.53
Total Enroll. Forced	34 Tot Roll	0.20	0.04	0.04	0.20
	85 Course Chem	0.55	0.30	0.26	0.53
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.16	0.03	0.02	0.16
	17 Type Jr	0.17	0.03	0.00	-0.13
	85 Course Chem	0.54	0.29	0.26	0.53
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.16	0.03	0.02	0.16
	17 Type Jr	0.17	0.03	0.00	-0.13
	34 Tot Roll	0.23	0.05	0.02	0.20
	85 Course Chem	0.55	0.30	0.25	0.53

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.38	0.15	0.15	0.38
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	85 Course Chem	0.38	0.15	0.15	0.38
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.16	0.03	0.03	0.13
	17 Type Jr	0.17	0.03	0.00	-0.16
	85 Course Chem	0.39	0.15	0.12	0.38
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.16	0.03	0.03	0.13
	17 Type Jr	0.17	0.03	0.00	-0.16
	34 Tot Roll	0.17	0.03	0.00	0.02
	85 Course Chem	0.39	0.15	0.12	0.38

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.44	0.20	0.20	0.44
	75 Hrs Phy Sci	0.51	0.26	0.07	0.41
	82 SCIP Phys TX	0.56	0.31	0.05	-0.14
Total Enroll. Forced	34 Tot Roll	0.04	0.00	0.00	0.04
	85 Course Chem	0.44	0.20	0.19	0.44
	75 Hrs Phy Sci	0.51	0.26	0.07	0.41
	82 SCIP Phys TX	0.56	0.31	0.05	-0.14
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.17	0.03	0.02	0.17
	17 Type Jr	0.18	0.03	0.00	-0.16
	85 Course Chem	0.46	0.21	0.18	0.44
	75 Hrs Phy Sci	0.52	0.27	0.06	0.41
	82 SCIP Phys TX	0.56	0.32	0.05	-0.14
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.17	0.03	0.02	0.17
	17 Type Jr	0.18	0.03	0.00	-0.16
	34 Tot Roll	0.18	0.03	0.00	0.04
	85 Course Chem	0.46	0.21	0.18	0.44
	75 Hrs Phy Sci	0.52	0.27	0.06	0.41
	82 SCIP Phys TX	0.56	0.32	0.05	-0.14

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.31	0.09	0.09	0.31
Total Enroll. Forced	34 Tot Roll	0.08	0.00	0.00	-0.08
	85 Course Chem	0.31	0.09	0.09	0.31
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.12	0.02	0.01	0.12
	17 Type Jr	0.12	0.02	0.00	-0.10
	85 Course Chem	0.31	0.10	0.08	0.31
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.12	0.02	0.01	0.12
	17 Type Jr	0.12	0.02	0.00	-0.10
	34 Tot Roll	0.14	0.02	0.00	-0.08
	85 Course Chem	0.31	0.10	0.08	0.31

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.41	0.17	0.17	0.41
	40 NSF Inserv	0.49	0.24	0.08	0.34
	83 Sci Teach Wksp	0.55	0.31	0.06	-0.29
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	0.09
	85 Course Chem	0.41	0.17	0.16	0.41
	31 SCIP Bio Roll	0.50	0.25	0.08	0.31
	83 Sci Teach Wksp	0.55	0.30	0.05	-0.29
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.06
	17 Type Jr	0.09	0.01	0.00	0.02
	85 Course Chem	0.43	0.19	0.18	0.41
	31 SCIP Bio Roll	0.51	0.26	0.07	0.31
	83 Sci Teach Wksp	0.56	0.31	0.05	-0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.06
	17 Type Jr	0.09	0.01	0.00	0.02
	34 Tot Roll	0.13	0.02	0.01	0.09
	85 Course Chem	0.43	0.19	0.17	0.41
	31 SCIP Bio Roll	0.52	0.27	0.08	0.31
	83 Sci Teach Wksp	0.57	0.32	0.05	-0.29

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.63	0.39	0.39	0.63
	87 Course Phys	0.71	0.50	0.11	0.38
Total Enroll. Forced	34 Tot Roll	0.19	0.04	0.04	0.19
	85 Course Chem	0.63	0.40	0.36	0.63
	87 Course Phys	0.71	0.50	0.11	0.38
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.35	0.12	0.12	0.33
	17 Type Jr	0.35	0.12	0.00	-0.31
	85 Course Chem	0.64	0.41	0.29	0.63
	87 Course Phys	0.71	0.51	0.09	0.38
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.35	0.12	0.12	0.33
	17 Type Jr	0.35	0.12	0.00	-0.31
	34 Tot Roll	0.36	0.13	0.01	0.19
	85 Course Chem	0.64	0.41	0.28	0.63
	87 Course Phys	0.71	0.51	0.09	0.38

TABLE 25 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	73 Hrs Wky Sci	0.44	0.20	0.20	0.44
	85 Course Chem	0.54	0.29	0.09	0.44
	82 SCIP Pays TX	0.59	0.34	0.05	-0.08
	65 Enll Siz	0.63	0.39	0.05	0.38
Total Enroll. Forced	74 Tot Enll	0.19	0.04	0.04	0.19
	85 Course Chem	0.48	0.23	0.19	0.44
	73 Hrs Wky Sci	0.55	0.30	0.07	0.44
	82 SCIP Pays TX	0.60	0.35	0.05	-0.08
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.32	0.11	0.09	0.32
	17 Type Jr	0.32	0.11	0.00	-0.21
	85 Course Chem	0.49	0.24	0.13	0.44
	73 Hrs Wky Sci	0.56	0.31	0.07	0.44
	82 SCIP Pays TX	0.61	0.37	0.06	-0.08
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.32	0.11	0.09	0.32
	17 Type Jr	0.32	0.11	0.00	-0.21
	74 Tot Enll	0.35	0.12	0.02	0.19
	85 Course Chem	0.51	0.26	0.14	0.44
	73 Hrs Wky Sci	0.56	0.31	0.06	0.44
	82 SCIP Pays TX	0.61	0.38	0.06	-0.08

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.33	0.11	0.11	0.33
Total Enroll. Forced	74 Tot Enll	0.11	0.01	0.01	0.11
	85 Course Chem	0.34	0.12	0.10	0.33
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.14	0.02	0.02	0.10
	17 Type Jr	0.14	0.02	0.00	-0.13
	85 Course Chem	0.33	0.11	0.09	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.14	0.02	0.02	0.10
	17 Type Jr	0.14	0.02	0.00	-0.13
	74 Tot Enll	0.17	0.03	0.01	0.11
	85 Course Chem	0.34	0.12	0.09	0.33

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	85 Course Chem	0.42	0.17	0.17	0.42
Total Enroll. Forced	74 Tot Enll	0.12	0.01	0.01	0.12
	85 Course Chem	0.43	0.18	0.17	0.42
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.18	0.03	0.03	0.17
	17 Type Jr	0.18	0.03	0.00	-0.15
	85 Course Chem	0.43	0.18	0.15	0.42
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.18	0.03	0.03	0.17
	17 Type Jr	0.18	0.03	0.00	-0.15
	74 Tot Enll	0.19	0.04	0.01	0.12
	85 Course Chem	0.43	0.19	0.15	0.42

TABLE 26

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF ENROLLMENTS IN CHEMISTRY COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33	SCIP Phys Roll	0.68	0.46	0.46	0.68
	09	Roll Chem	0.72	0.52	0.06	0.55
Total Enroll. Forced	34	Tot Roll	0.52	0.28	0.28	0.52
	33	SCIP Phys Roll	0.72	0.52	0.24	0.68
School Type Forced	15	Type J-Sr	0.15	0.02	0.02	-0.15
	16	Type Sr	0.28	0.08	0.06	0.28
	17	Type Jr	0.28	0.08	0.00	-0.20
	33	SCIP Phys Roll	0.68	0.47	0.39	0.68
	09	Roll Chem	0.72	0.52	0.05	0.55
School Type & Total Enroll. Forced	15	Type J-Sr	0.15	0.02	0.02	-0.15
	16	Type Sr	0.28	0.08	0.06	0.28
	17	Type Jr	0.28	0.08	0.00	-0.20
	34	Tot Roll	0.54	0.29	0.21	0.52
	33	SCIP Phys Roll	0.72	0.52	0.23	0.68

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	09	Roll Chem	0.46	0.21	0.21	0.46
Total Enroll. Forced	34	Tot Roll	0.25	0.06	0.06	0.25
	09	Roll Chem	0.46	0.21	0.15	0.46
School Type Forced	15	Type J-Sr	0.12	0.02	0.02	-0.12
	16	Type Sr	0.32	0.10	0.09	0.32
	17	Type Jr	0.32	0.10	0.00	-0.24
	09	Roll Chem	0.47	0.22	0.11	0.46
School Type & Total Enroll. Forced	15	Type J-Sr	0.12	0.02	0.02	-0.12
	16	Type Sr	0.32	0.10	0.09	0.32
	17	Type Jr	0.32	0.10	0.00	-0.24
	34	Tot Roll	0.36	0.13	0.03	0.25
	09	Roll Chem	0.47	0.22	0.09	0.46

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	09	Roll Chem	0.56	0.31	0.31	0.56
	33	SCIP Phys Roll	0.66	0.43	0.12	0.55
	31	SCIP Bio Roll	0.70	0.49	0.06	0.52
Total Enroll. Forced	34	Tot Roll	0.41	0.17	0.17	0.41
	33	SCIP Phys Roll	0.61	0.37	0.20	0.55
	31	SCIP Bio Roll	0.67	0.45	0.09	0.52
School Type Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.33	0.11	0.11	0.33
	17	Type Jr	0.34	0.11	0.00	-0.31
	33	SCIP Phys Roll	0.58	0.33	0.22	0.55
	31	SCIP Bio Roll	0.66	0.43	0.10	0.52
	09	Roll Chem	0.70	0.49	0.06	0.56
School Type & Total Enroll. Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.33	0.11	0.11	0.33
	17	Type Jr	0.34	0.11	0.00	-0.31
	34	Tot Roll	0.47	0.22	0.11	0.41
	33	SCIP Phys Roll	0.62	0.38	0.16	0.55
	31	SCIP Bio Roll	0.68	0.46	0.07	0.52

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33	SCIP Phys Roll	0.44	0.19	0.19	0.44
	30	SCIP Es Roll	0.51	0.26	0.07	0.31
Total Enroll. Forced	34	Tot Roll	0.26	0.07	0.07	0.26
	33	SCIP Phys Roll	0.44	0.19	0.13	0.44
	30	SCIP Es Roll	0.51	0.26	0.07	0.31
School Type Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.18	0.03	0.03	0.18
	17	Type Jr	0.20	0.04	0.00	-0.16
	33	SCIP Phys Roll	0.45	0.20	0.16	0.44
	30	SCIP Es Roll	0.52	0.27	0.07	0.31
School Type & Total Enroll. Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.18	0.03	0.03	0.18
	17	Type Jr	0.20	0.04	0.00	-0.16
	34	Tot Roll	0.30	0.09	0.05	0.26
	33	SCIP Phys Roll	0.45	0.20	0.12	0.44
	30	SCIP Es Roll	0.52	0.27	0.07	0.31

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	31	SCIP Bio Roll	0.58	0.34	0.34	0.58
	26	Teach Sci M	0.64	0.41	0.07	0.54
Total Enroll. Forced	34	Tot Roll	0.44	0.19	0.19	0.44
	31	SCIP Bio Roll	0.62	0.38	0.19	0.58
	02	Teach Buy Eq	0.66	0.44	0.05	0.24
School Type Forced	15	Type J-Sr	0.03	0.00	0.00	-0.03
	16	Type Sr	0.15	0.02	0.02	0.13
	17	Type Jr	0.15	0.02	0.00	-0.11
	31	SCIP Bio Roll	0.59	0.35	0.33	0.58
	26	Teach Sci M	0.64	0.41	0.06	0.54
School Type & Total Enroll. Forced	15	Type J-Sr	0.03	0.00	0.00	-0.03
	16	Type Sr	0.15	0.02	0.02	0.13
	17	Type Jr	0.15	0.02	0.00	-0.11
	34	Tot Roll	0.44	0.19	0.17	0.44
	31	SCIP Bio Roll	0.62	0.39	0.19	0.58
	02	Teach Buy Eq	0.66	0.44	0.05	0.24

Rocky Mountains (N = 85)

	Variable No and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33	SCIP Phys Roll	0.76	0.57	0.57	0.76
	31	SCIP Bio Roll	0.79	0.63	0.06	0.69
Total Enroll. Forced	34	Tot Roll	0.42	0.18	0.18	0.42
	33	SCIP Phys Roll	0.78	0.60	0.43	0.76
School Type Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.49	0.24	0.24	0.49
	17	Type Jr	0.49	0.24	0.00	-0.40
	33	SCIP Phys Roll	0.77	0.59	0.35	0.76
School Type & Total Enroll. Forced	15	Type J-Sr	0.08	0.01	0.01	-0.08
	16	Type Sr	0.49	0.24	0.24	0.49
	17	Type Jr	0.49	0.24	0.00	-0.40
	34	Tot Roll	0.55	0.31	0.06	0.42
	33	SCIP Phys Roll	0.79	0.62	0.31	0.76

TABLE 26 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.72	0.52	0.52	0.72
	28 Roll Geol	0.82	0.67	0.15	0.60
Total Enroll. Forced	34 Tot Roll	0.26	0.07	0.07	0.26
	09 Roll Chem	0.73	0.57	0.50	0.68
	33 SCIP Phys Roll	0.86	0.75	0.18	0.72
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.13	0.02	0.02	0.10
	17 Type Jr	0.15	0.02	0.00	-0.14
	33 SCIP Phys Roll	0.73	0.53	0.50	0.72
	28 Roll Geol	0.82	0.68	0.15	0.60
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.03
	16 Type Sr	0.15	0.02	0.02	0.10
	17 Type Jr	0.15	0.02	0.00	-0.14
	34 Tot Roll	0.31	0.10	0.07	0.26
	09 Roll Chem	0.76	0.58	0.48	0.68
	33 SCIP Phys Roll	0.87	0.76	0.18	0.72

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.80	0.63	0.63	0.80
Total Enroll. Forced	34 Tot Roll	0.42	0.17	0.17	0.42
	33 SCIP Phys Roll	0.80	0.64	0.46	0.80
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.20	0.04	0.04	0.17
	17 Type Jr	0.20	0.04	0.00	-0.15
	33 SCIP Phys Roll	0.80	0.64	0.60	0.80
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.20	0.04	0.04	0.17
	17 Type Jr	0.20	0.04	0.00	-0.15
	34 Tot Roll	0.44	0.19	0.15	0.42
	33 SCIP Phys Roll	0.80	0.64	0.45	0.80
	09 Roll Chem	0.83	0.69	0.05	0.65

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	33 SCIP Phys Roll	0.57	0.33	0.33	0.57
	09 Roll Chem	0.65	0.42	0.09	0.51
Total Enroll. Forced	34 Tot Roll	0.40	0.16	0.16	0.40
	33 SCIP Phys Roll	0.62	0.38	0.22	0.57
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.27	0.07	0.07	0.26
	17 Type Jr	0.27	0.07	0.00	-0.22
	33 SCIP Phys Roll	0.59	0.35	0.27	0.57
	09 Roll Chem	0.65	0.42	0.07	0.51
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.27	0.07	0.07	0.26
	17 Type Jr	0.27	0.07	0.00	-0.22
	34 Tot Roll	0.43	0.18	0.11	0.40
	33 SCIP Phys Roll	0.62	0.39	0.20	0.57

The mean values for these two variables are reported in Tables 27 and 28. These means show a range of from 2 percent of the teachers of the Rocky Mountains region to 15 percent of the New England region reporting experience using SCIP materials in teaching physics.

TABLE 27

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHING EXPERIENCE USING PHYSICS SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.07	0.10	0.15	0.06	0.04	0.02	0.06	0.06	0.07
S.D.	0.26	0.29	0.35	0.23	0.19	0.15	0.23	0.24	0.25
N	439	314	130	435	182	85	225	363	2193

[a] yes = 1, no = 0

TABLE 28

MEANS AND STANDARD DEVIATIONS FOR ENROLLMENTS IN PHYSICS COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	19.53	22.97	24.69	15.93	10.47	11.36	19.85	5.76	16.30
S.D.	39.38	36.61	46.66	45.60	29.88	26.62	67.43	19.50	41.47
N	439	314	130	435	182	85	225	363	2193

The mean enrollment in physics courses using SCIP materials ranged from a high of 24.69 in the New England region to a low of 5.76 in the Southeast. These two variables were significantly correlated ($\alpha \leq 0.001$) in four of the eight regions.

The variable, Teaching Experience Using Physics SCIP Materials had a significant ($\alpha \leq 0.001$) positive correlation in at least four of the eight regions for the following:

+General enrollment in biology
+Teacher's College Physical Science and Mathematics Credits
+Twelfth grade physics course using SCIP materials chosen for this survey

A significant negative correlation was obtained for the teaching experience with SCIP materials and

-Teacher's College Biology Credits
-Biology course chosen for this survey

The variable, Enrollments in Physics Courses Using SCIP Materials correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following:

- +General enrollments in 9th thru 12th grade science courses (basic and advanced)
- +Use of SCIP
- +Enrollments in courses using SCIP at high school level
- +Number of Teachers
- +Teacher selected for survey teaches SCIP physics at 11th or 12th grade level
- +Computer terminal available
- +Ham radio available
- +Teacher's College Science Credits

The regression analyses results in Table 29 indicate that the best predictors of Teaching Experience Using Physics SCIP Materials is whether or not the selected class for this survey was a physics course. College credits in mathematics or in physical science were predictors of experience with SCIP for three of the regions, Mideast, Southwest, and Plains. The predictor of enrollments in SCIP physics courses as reported in Table 30 was enrollment in SCIP chemistry courses in six of the eight regions. The New England region SCIP physics enrollments were best predicted by SCIP biology enrollments. In the Southwest region the general physics enrollment was the best predictor followed by the SCIP chemistry enrollments.

The percent variance accounted for by use of SCIP chemistry enrollments was reduced when Total Student Enrollment was partialled out but the SCIP chemistry enrollment still contributed the most to the prediction. This would indicate a slight dependence of SCIP Physics Enrollments on school size.

Teacher Participation in National Science Foundation Institutes

Information concerning this variable was obtained from the responses to the Science Teacher Questionnaire. The teachers were asked to indicate the years they had participated in NSF-sponsored institutes. The institutes included for their responses were Academic Year (AYI), In-Service, Summer, and NSF Research Institutes.

Less than 10 percent of the responding teachers had participated in the AYI program while 51 percent and 22 percent had participated in summer and in-service programs respectively. The summer and in-service program participation variables were selected for further analysis.

The mean values for Teacher Participation in National Science Foundation In-Service Institutes and for Teacher Participation in National Science Foundation Summer Institutes are given in Tables 31 and 32. The means represent the average number of institutes attended from 1961 thru 1970.

TABLE 29

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHING EXPERIENCE USING PHYSICS SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.50	0.25	0.25	0.50
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	87 Course Physics	0.51	0.26	0.26	0.50
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.15	0.02	0.01	0.15
	17 Type Jr	0.15	0.02	0.00	-0.11
	87 Course Physics	0.52	0.27	0.25	0.50
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.15	0.02	0.01	0.15
	17 Type Jr	0.15	0.02	0.00	-0.11
	34 Tot Roll	0.16	0.02	0.00	0.03
	87 Course Physics	0.52	0.27	0.25	0.50

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.38	0.14	0.14	0.38
	77 Hrs Math	0.44	0.19	0.05	0.33
Total Enroll Forced	34 Tot Roll	0.00	0.00	0.00	-0.00
	87 Course Physics	0.38	0.14	0.14	0.38
	77 Hrs Math	0.44	0.19	0.05	0.33
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.18	0.03	0.03	0.18
	17 Type Jr	0.18	0.03	0.00	-0.13
	87 Course Physics	0.39	0.16	0.12	0.38
	77 Hrs Math	0.45	0.20	0.05	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.18	0.03	0.03	0.18
	17 Type Jr	0.18	0.03	0.00	-0.13
	34 Tot Roll	0.20	0.04	0.00	-0.00
	87 Course Physics	0.40	0.16	0.13	0.38
	77 Hrs Math	0.46	0.21	0.05	0.33

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.41	0.17	0.17	0.41
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	87 Course Physics	0.41	0.17	0.17	0.41
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.16	0.03	0.02	0.16
	17 Type Jr	0.16	0.03	0.00	-0.14
	87 Course Physics	0.43	0.18	0.16	0.41
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.16	0.03	0.02	0.16
	17 Type Jr	0.16	0.03	0.00	-0.14
	34 Tot Roll	0.16	0.03	0.00	0.03
	87 Course Physics	0.43	0.18	0.16	0.41

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.48	0.23	0.23	0.48
	77 Hrs Math	0.56	0.32	0.09	0.42
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	87 Course Physics	0.48	0.23	0.23	0.48
	77 Hrs Math	0.56	0.32	0.09	0.42
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.12	0.01	0.01	0.07
	17 Type Jr	0.12	0.01	0.00	-0.11
	87 Course Physics	0.48	0.23	0.22	0.48
	77 Hrs Math	0.56	0.32	0.09	0.42
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.12	0.01	0.01	0.07
	17 Type Jr	0.12	0.01	0.00	-0.11
	34 Tot Roll	0.12	0.01	0.00	0.02
	87 Course Physics	0.48	0.23	0.22	0.48
	77 Hrs Math	0.56	0.32	0.09	0.42

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.74	0.55	0.55	0.74
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	-0.03
	87 Course Physics	0.74	0.55	0.55	0.74
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.11	0.01	0.01	0.08
	17 Type Jr	0.11	0.01	0.00	-0.10
	87 Course Physics	0.74	0.55	0.54	0.74
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.11	0.01	0.01	0.08
	17 Type Jr	0.11	0.01	0.00	-0.10
	34 Tot Roll	0.12	0.01	0.00	-0.03
	87 Course Physics	0.74	0.55	0.54	0.74

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.33	0.11	0.11	0.33
	47 Lecture	0.42	0.18	0.07	0.21
	08 Roll Bio	0.49	0.24	0.06	-0.10
	16 Type Sr	0.55	0.30	0.06	0.19
Total Enroll. Forced	34 Tot Roll	0.04	0.00	0.00	-0.04
	87 Course Physics	0.34	0.12	0.11	0.33
	47 Lecture	0.44	0.19	0.08	0.21
	08 Roll Bio	0.50	0.25	0.05	-0.10
	16 Type Sr	0.56	0.31	0.06	0.19
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.19	0.03	0.03	0.19
	17 Type Jr	0.19	0.03	0.00	-0.14
	08 Roll Bio	0.41	0.16	0.13	-0.10
	87 Course Physics	0.51	0.26	0.09	0.33
School Type & Total Enroll Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.19	0.03	0.03	0.19
	17 Type Jr	0.19	0.03	0.00	-0.14
	34 Tot Roll	0.23	0.05	0.02	-0.04
	08 Roll Bio	0.43	0.18	0.13	-0.10
	87 Course Physics	0.53	0.28	0.10	0.33

TABLE 29 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.44	0.19	0.19	0.44
	75 Hrs Phy Sci	0.50	0.25	0.06	0.39
	80 SCIP Chem TX	0.54	0.29	0.04	-0.08
	06 Roll Bio	0.58	0.33	0.05	0.26
Total Enroll Forced	34 Tot Roll	0.20	0.04	0.04	0.20
	87 Course Physics	0.47	0.22	0.18	0.44
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.19	0.04	0.04	0.17
	17 Type Jr	0.19	0.04	0.00	-0.16
	87 Course Physics	0.45	0.20	0.17	0.44
	75 Hrs Phy Sci	0.50	0.25	0.05	0.39
	80 SCIP Chem TX	0.55	0.30	0.05	-0.08
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.19	0.04	0.04	0.17
	17 Type Jr	0.19	0.04	0.00	-0.16
	34 Tot Roll	0.27	0.07	0.03	0.20
	87 Course Physics	0.47	0.23	0.15	0.44
	75 Hrs Phy Sci	0.51	0.26	0.04	0.39
	80 SCIP Chem TX	0.56	0.31	0.05	-0.06

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.43	0.19	0.19	0.43
	32 SCIP Chem Roll	0.53	0.28	0.09	0.35
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	0.14
	87 Course Physics	0.44	0.20	0.18	0.43
	33 SCIP Phys Roll	0.53	0.28	0.08	0.39
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	0.10
	16 Type Sr	0.19	0.04	0.02	0.09
	17 Type Jr	0.19	0.04	0.00	-0.15
	87 Course Physics	0.45	0.20	0.17	0.43
	33 SCIP Phys Roll	0.54	0.29	0.08	0.39
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	0.10
	16 Type Sr	0.19	0.04	0.02	0.09
	17 Type Jr	0.19	0.04	0.00	-0.15
	34 Tot Roll	0.23	0.05	0.02	0.14
	87 Course Physics	0.46	0.21	0.16	0.43
	33 SCIP Phys Roll	0.54	0.29	0.08	0.39

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	87 Course Physics	0.46	0.21	0.21	0.46
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	87 Course Physics	0.47	0.22	0.21	0.46
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.16	0.03	0.03	0.15
	17 Type Jr	0.16	0.03	0.00	-0.14
	87 Course Physics	0.47	0.22	0.20	0.46
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.16	0.03	0.03	0.15
	17 Type Jr	0.16	0.03	0.00	-0.14
	34 Tot Roll	0.16	0.03	0.00	0.06
	87 Course Physics	0.47	0.22	0.20	0.46

TABLE 30

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF ENROLLMENTS IN PHYSICS COURSES USING SCIENCE COURSE IMPROVEMENT PROJECT MATERIALS

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32 SCIP Chem Roll	0.68	0.46	0.46	0.68
Total Enroll. Forced	34 Tot Roll	0.46	0.21	0.21	0.46
	32 SCIP Chem Roll	0.69	0.47	0.26	0.68
School Type Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.28	0.08	0.06	0.28
	17 Type Jr	0.28	0.08	0.00	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.28	0.08	0.06	0.28
	17 Type Jr	0.28	0.08	0.00	-0.20
	34 Tot Roll	0.48	0.23	0.15	0.46
	32 SCIP Chem Roll	0.69	0.48	0.25	0.68

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32 SCIP Chem Roll	0.33	0.11	0.11	0.33
Total Enroll. Forced	34 Tot Roll	0.13	0.02	0.02	0.13
	32 SCIP Chem Roll	0.33	0.11	0.09	0.33
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.28	0.08	0.07	0.28
	17 Type Jr	0.28	0.08	0.00	-0.22
	32 SCIP Chem Roll	0.38	0.14	0.06	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.28	0.08	0.07	0.28
	17 Type Jr	0.28	0.08	0.00	-0.22
	34 Tot Roll	0.29	0.08	0.00	0.13
	32 SCIP Chem Roll	0.38	0.14	0.06	0.33

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32 SCIP Chem Roll	0.55	0.30	0.30	0.55
Total Enroll. Forced	34 Tot Roll	0.30	0.09	0.09	0.30
	32 SCIP Chem Roll	0.55	0.31	0.22	0.55
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.30	0.09	0.08	0.30
	17 Type Jr	0.30	0.09	0.00	-0.28
	32 SCIP Chem Roll	0.56	0.32	0.23	0.55
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.30	0.09	0.08	0.30
	17 Type Jr	0.30	0.09	0.00	-0.28
	34 Tot Roll	0.38	0.14	0.05	0.30
	32 SCIP Chem Roll	0.57	0.32	0.18	0.55

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	10 Roll Physics	0.65	0.42	0.42	0.65
	32 SCIP Chem Roll	0.69	0.47	0.06	0.44
Total Enroll. Forced	34 Tot Roll	0.50	0.25	0.25	0.50
	10 Roll Physics	0.67	0.45	0.19	0.65
	32 SCIP Chem Roll	0.71	0.50	0.05	0.44
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.21	0.04	0.04	0.21
	17 Type Jr	0.22	0.05	0.00	-0.19
	10 Roll Physics	0.65	0.42	0.37	0.65
	32 SCIP Chem Roll	0.69	0.47	0.06	0.44
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.21	0.04	0.04	0.21
	17 Type Jr	0.22	0.05	0.00	-0.19
	34 Tot Roll	0.52	0.27	0.23	0.50
	10 Roll Physics	0.67	0.46	0.18	0.65
	32 SCIP Chem Roll	0.71	0.50	0.05	0.44

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	31 SCIP Bio Roll	0.45	0.20	0.20	0.45
	10 Roll Physics	0.56	0.31	0.11	0.43
	29 SCIP PS Roll	0.60	0.36	0.06	0.24
Total Enroll. Forced	34 Tot Roll	0.29	0.08	0.08	0.29
	31 SCIP Bio Roll	0.46	0.21	0.13	0.45
	10 Roll Physics	0.56	0.31	0.10	0.43
	29 SCIP PS Roll	0.60	0.36	0.06	0.24
School Type Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.16	0.02	0.02	0.15
	17 Type Jr	0.16	0.02	0.00	-0.11
	31 SCIP Bio Roll	0.46	0.21	0.19	0.45
	10 Roll Physics	0.56	0.31	0.10	0.43
	29 SCIP PS Roll	0.62	0.38	0.06	0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.16	0.02	0.02	0.15
	17 Type Jr	0.16	0.02	0.00	-0.11
	34 Tot Roll	0.30	0.09	0.07	0.29
	31 SCIP Bio Roll	0.47	0.22	0.13	0.45
	10 Roll Physics	0.56	0.31	0.10	0.43
	29 SCIP PS Roll	0.62	0.38	0.06	0.24

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	32 SCIP Chem Roll	0.76	0.57	0.57	0.76
	10 Roll Physics	0.80	0.63	0.06	0.63
Total Enroll. Forced	34 Tot Roll	0.33	0.11	0.11	0.33
	32 SCIP Chem Roll	0.76	0.57	0.46	0.76
	10 Roll Physics	0.80	0.64	0.07	0.63
	31 SCIP Bio Roll	0.83	0.68	0.05	0.69
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.48	0.23	0.22	0.48
	17 Type Jr	0.48	0.23	0.00	-0.39
	32 SCIP Chem Roll	0.77	0.59	0.36	0.76
	10 Roll Physics	0.80	0.63	0.04	0.63
	31 SCIP Bio Roll	0.83	0.68	0.05	0.69
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.48	0.23	0.22	0.48
	17 Type Jr	0.48	0.23	0.00	-0.39
	34 Tot Roll	0.51	0.26	0.02	0.33
	32 SCIP Chem Roll	0.77	0.59	0.33	0.76
	10 Roll Physics	0.80	0.64	0.05	0.63
	31 SCIP Bio Roll	0.83	0.70	0.05	0.69

TABLE 30 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	38 SCIP Chem Enrl	0.72	0.52	0.52	0.72
	31 SCIP Bio Enrl	0.80	0.64	0.12	0.46
Total Enroll. Forced	34 Tot Enrl	0.33	0.11	0.11	0.33
	38 SCIP Chem Enrl	0.73	0.54	0.43	0.72
	31 SCIP Bio Enrl	0.80	0.64	0.10	0.46
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.11	0.01	0.01	0.11
	17 Type Jr	0.12	-0.01	0.00	-0.08
	38 SCIP Chem Enrl	0.72	0.52	0.51	0.72
	31 SCIP Bio Enrl	0.80	0.64	0.12	0.46
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.11	0.01	0.01	0.11
	17 Type Jr	0.12	0.01	0.00	-0.08
	34 Tot Enrl	0.35	0.12	0.11	0.33
	38 SCIP Chem Enrl	0.73	0.54	0.42	0.72
	31 SCIP Bio Enrl	0.80	0.65	0.11	0.46

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	38 SCIP Chem Enrl	0.80	0.63	0.63	0.80
Total Enroll. Forced	34 Tot Enrl	0.47	0.22	0.22	0.47
	38 SCIP Chem Enrl	0.81	0.65	0.44	0.80
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.23	0.05	0.05	0.21
	17 Type Jr	0.23	0.05	0.00	-0.18
	38 SCIP Chem Enrl	0.80	0.64	0.59	0.80
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.23	0.05	0.05	0.21
	17 Type Jr	0.23	0.05	0.00	-0.18
	34 Tot Enrl	0.49	0.24	0.19	0.47
	38 SCIP Chem Enrl	0.81	0.66	0.42	0.80

All Regions Combined (N = 2193)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	38 SCIP Chem Enrl	0.57	0.33	0.33	0.57
Total Enroll. Forced	34 Tot Enrl	0.32	0.10	0.10	0.32
	38 SCIP Chem Enrl	0.58	0.34	0.24	0.57
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.24	0.06	0.05	0.24
	17 Type Jr	0.24	0.06	0.00	-0.19
	38 SCIP Chem Enrl	0.58	0.34	0.28	0.57
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.24	0.06	0.05	0.24
	17 Type Jr	0.24	0.06	0.00	-0.19
	34 Tot Enrl	0.36	0.13	0.07	0.32
	38 SCIP Chem Enrl	0.59	0.34	0.22	0.57

TABLE 31

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION IN-SERVICE INSTITUTES

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.39	0.51	0.65	0.72	0.38	0.62	0.62	0.42	0.52
S.D.	0.89	0.93	1.29	1.41	1.01	1.07	1.26	0.80	1.09
N	459	314	130	435	182	85	225	362	2192

[a]Number of Institutes

TABLE 32

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTES

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.29	1.42	1.61	1.13	1.19	1.07	1.20	0.89	1.20
S.D.	1.61	1.60	1.85	1.52	1.47	1.38	1.43	1.26	1.52
N	459	314	130	435	182	85	225	362	2192

[a]Number of Institutes

The participation in NSF In-Service Institutes ranged from a low of about 20 percent in the Southwest, Great Lakes, and Southeast regions to a high of about 35 percent in the Mideast. The participation in NSF Summer Institute Program ranged from a low of about 40 percent in the Southeast to a high of about 60 percent in the Farwest region. It can be seen that the frequency of participation in NSF sponsored institutes varies by region depending on the nature of the NSF program. To get a more general picture of the participation in NSF programs, the In-Service and Summer Institute variables were combined. A new variable, Teacher Participation in National Science Foundation Institutes, was produced. If a teacher reported participation in any NSF Institutes a one was recorded, otherwise a zero was recorded.

The means and standard deviations for Teacher Participation in National Science Foundation Institutes are given in Table 33. Participation in NSF Institutes ranged from 58 percent to 72 percent with the Farwest at the upper end. The participation across the country was quite uniform according to the data from these respondents.

TABLE 33

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION INSTITUTES

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	0.62	0.72	0.68	0.62	0.58	0.69	0.64	0.58	0.63
S.D.	0.49	0.45	0.47	0.49	0.49	0.46	0.48	0.49	0.48
N	459	314	130	435	182	85	225	362	2192

[a]yes = 1, no = 0

Variables were identified as correlates of NSF Institute participation if they were significantly correlated ($\alpha \leq 0.001$) in at least four of the eight regions. The positive correlates were:

+Teacher's College Science Credits
+Age of Teacher
+Highest Degree Held by Teacher
+Secondary School Science Teaching Experience
+Teacher's College Physical Science and/or Mathematics Credits
+Sex of Teacher (2 = male, 1 = female)
+Total Student Enrollment
+Use of Science Course Improvement Projects

There were no negative correlates among the variables included in the study. From the positive correlates and the means in Table 2, p.9 it may be inferred that the participants in the NSF programs tend to be more experienced, higher educated, older males from larger schools with a tendency to focus on mathematics and the physical sciences. Not all of these characteristics are necessarily concurrent for participants but each characteristic is correlated.

The NSF Institute programs required that a teacher have a minimum of three years experience which may account for many of these correlates. The participation in these institutes also could contribute directly to credit hours and degrees and consequently to school size relationships. Teachers with more experience and more education tend to move "up" in the system to larger secondary schools.

The relationship of sex of the teacher to NSF participation is a reflection of the few women in science teaching at the secondary level. Whether or not those women in secondary school science teaching were discriminated against in selection of NSF Institute participants cannot be determined from these data.

The relationship between Use of Science Course Improvement Projects and NSF Institute participation is expected. Many institutes were designed to make people aware of the SCIP materials and train them in their use. Therefore, participants may have gone out to use the materials because of the institutes or they may have attended the institute in order to learn how to use programs and materials they had already selected.

It was also found that the participation in NSF Summer Institutes correlated significantly with participation in NSF In-Service Institutes. Teachers who applied and were selected for one of the NSF programs tended to apply and be selected for other NSF programs.

In the regression analyses, Tables 34, 35, and 36 the following results were obtained. The most predominate predictor of NSF Institute participation was the number of college science credits the science teachers reported. This variable was a significant predictor in all regions except the Mideast and Southeast. In these two regions, the Secondary School Science Teaching Experience in Years was the best predictor.

TABLE 34

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION IN-SERVICE INSTITUTES

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	10	Roll Physics	0.24	0.06	0.06	0.24
Total Enroll. Forced	34	Tot Roll	0.16	0.03	0.03	0.16
School Type Forced	15	Type J-Sr	0.09	0.01	0.01	-0.09
	16	Type Sr	0.13	0.02	0.01	0.13
	17	Type Jr	0.13	0.02	0.00	-0.07
	10	Roll Physics	0.25	0.06	0.05	0.24
School Type & Total Enroll. Forced	15	Type J-Sr	0.09	0.01	0.01	-0.09
	16	Type Sr	0.13	0.02	0.01	0.13
	17	Type Jr	0.13	0.02	0.00	-0.07
	34	Tot Roll	0.18	0.03	0.01	0.16

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78	Hrs Sci	0.23	0.05	0.05	0.23
Total Enroll. Forced	34	Tot Roll	0.04	0.00	0.00	0.04
	78	Hrs Sci	0.23	0.05	0.05	0.23
School Type Forced	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.12	0.01	0.01	0.12
	17	Type Jr	0.13	0.02	0.00	-0.09
School Type & Total Enroll. Forced	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.12	0.01	0.01	0.12
	17	Type Jr	0.13	0.02	0.00	-0.09
	34	Tot Roll	0.13	0.02	0.00	0.04

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None		——	——	——	——
Total Enroll. Forced	34	Tot Roll	0.03	0.00	0.00	-0.03
School Type Forced	15	Type J-Sr	0.15	0.02	0.02	0.15
	16	Type Sr	0.15	0.02	0.00	-0.05
	17	Type Jr	0.22	0.05	0.02	-0.05
School Type & Total Enroll. Forced	15	Type J-Sr	0.15	0.02	0.02	0.15
	16	Type Sr	0.15	0.02	0.00	-0.05
	17	Type Jr	0.22	0.05	0.02	-0.05
	34	Tot Roll	0.22	0.05	0.00	-0.03

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	26	Teach Sci M	0.32	0.10	0.10	0.32
	65	Admin Supp	0.41	0.17	0.07	-0.28
	76	Hrs Earth	0.47	0.22	0.05	0.25
Total Enroll. Forced	34	Tot Roll	0.18	0.03	0.03	0.18
	26	Teach Sci M	0.32	0.10	0.07	0.32
	65	Admin Supp	0.41	0.17	0.07	-0.28
	76	Hrs Earth	0.47	0.22	0.05	0.25
School Type Forced	15	Type J-Sr	0.07	0.01	0.01	0.07
	16	Type Sr	0.15	0.02	0.02	0.08
	17	Type Jr	0.15	0.02	0.00	-0.12
	26	Teach Sci M	0.35	0.12	0.10	0.32
	76	Hrs Earth	0.43	0.18	0.06	0.25
	65	Admin Supp	0.49	0.24	0.05	-0.28
School Type & Total Enroll. Forced	15	Type J-Sr	0.07	0.01	0.01	0.07
	16	Type Sr	0.15	0.02	0.02	0.08
	17	Type Jr	0.15	0.02	0.00	-0.12
	34	Tot Roll	0.24	0.06	0.04	0.18
	76	Hrs Earth	0.36	0.13	0.07	0.25
	26	Teach Sci M	0.43	0.19	0.06	0.32
	65	Admin Supp	0.49	0.24	0.05	-0.28
	08	Roll Bio	0.54	0.29	0.05	-0.01

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	30	SCIP ES Roll	0.44	0.19	0.19	0.44
	80	SCIP Chem TE	0.52	0.27	0.07	0.34
Total Enroll. Forced	34	Tot Roll	0.25	0.06	0.06	0.25
	30	SCIP ES Roll	0.45	0.21	0.14	0.44
	80	SCIP Chem TE	0.53	0.28	0.07	0.34
School Type Forced	15	Type J-Sr	0.12	0.01	0.01	-0.12
	16	Type Sr	0.13	0.02	0.00	0.05
	17	Type Jr	0.14	0.02	0.00	0.06
	30	SCIP ES Roll	0.49	0.24	0.22	0.44
	80	SCIP Chem TE	0.55	0.30	0.06	0.34
School Type & Total Enroll. Forced	15	Type J-Sr	0.12	0.01	0.01	-0.12
	16	Type Sr	0.13	0.02	0.00	0.05
	17	Type Jr	0.14	0.02	0.00	0.06
	34	Tot Roll	0.28	0.08	0.06	0.25
	30	SCIP ES Roll	0.50	0.25	0.17	0.44
	80	SCIP Chem TE	0.55	0.31	0.06	0.34

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78	Hrs Sci	0.27	0.07	0.07	0.27
	59	Writ Assign	0.40	0.16	0.09	0.25
	65	Admin Supp	0.47	0.22	0.06	0.26
	44	Slide Proj	0.54	0.29	0.07	0.26
	51	Ind Study	0.59	0.35	0.06	0.23
Total Enroll. Forced	34	Tot Roll	0.08	0.01	0.01	-0.08
	78	Hrs Sci	0.30	0.09	0.08	0.27
	68	Inservice	0.42	0.18	0.08	0.25
	44	Slide Proj	0.48	0.23	0.06	0.26
	51	Ind Study	0.55	0.31	0.07	0.23
School Type Forced	15	Type J-Sr	0.20	0.04	0.04	-0.20
	16	Type Sr	0.24	0.06	0.02	-0.06
	17	Type Jr	0.41	0.17	0.11	0.05
	78	Hrs Sci	0.49	0.24	0.07	0.27
	01	Grouping	0.55	0.30	0.06	0.21
	44	Slide Proj	0.62	0.38	0.08	0.26
School Type & Total Enroll. Forced	15	Type J-Sr	0.20	0.04	0.04	-0.20
	16	Type Sr	0.24	0.06	0.02	-0.06
	17	Type Jr	0.41	0.17	0.11	0.05
	34	Tot Roll	0.42	0.18	0.00	-0.08
	78	Hrs Sci	0.50	0.25	0.07	0.27
	01	Grouping	0.56	0.31	0.07	0.21
	44	Slide Proj	0.62	0.39	0.07	0.26

TABLE 34 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	74 Hrs Bio	0.26	0.07	0.07	0.26
Total Enroll. Forced	34 Tot Enroll	0.03	0.00	0.00	0.03
	74 Hrs Bio	0.26	0.07	0.07	0.26
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.07	0.00	0.00	-0.07
	17 Type Jr	0.10	0.01	0.01	0.05
	78 Hrs Sci	0.29	0.09	0.08	0.26
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.07	0.00	0.00	-0.07
	17 Type Jr	0.10	0.01	0.01	0.05
	34 Tot Enroll	0.11	0.01	0.00	0.03
	78 Hrs Sci	0.29	0.09	0.07	0.26

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	42 Taught Sci	0.25	0.06	0.06	0.25
Total Enroll. Forced	34 Tot Enroll	0.01	0.00	0.00	0.01
	42 Taught Sci	0.25	0.06	0.06	0.25
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.05	0.00	0.00	-0.05
	17 Type Jr	0.09	0.01	0.01	-0.03
	42 Taught Sci	0.27	0.07	0.06	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.05	0.00	0.00	-0.05
	17 Type Jr	0.09	0.01	0.01	-0.03
	34 Tot Enroll	0.10	0.01	0.00	0.01
	42 Taught Sci	0.27	0.07	0.06	0.25

All Regions Combined (N = 2192)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Enroll	0.07	0.01	0.01	0.07
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.04	0.00	0.00	-0.03
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.04	0.00	0.00	-0.03
	34 Tot Enroll	0.08	0.01	0.00	0.07

TABLE 35

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTES

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	75 Hrs Phy Sci	0.31	0.09	0.09	0.31
Total Enroll. Forced	34 Tot Roll	0.19	0.04	0.04	0.19
	75 Hrs Phy Sci	0.34	0.11	0.08	0.31
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.11	0.01	0.01	0.11
	17 Type Jr	0.11	0.01	0.00	-0.08
	75 Hrs Phy Sci	0.31	0.10	0.08	0.31
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.11	0.01	0.01	0.11
	17 Type Jr	0.11	0.01	0.00	-0.08
	34 Tot Roll	0.20	0.04	0.03	0.19
	75 Hrs Phv Sci	0.34	0.11	0.07	0.31

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.35	0.12	0.12	0.35
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	78 Hrs Sci	0.35	0.12	0.12	0.35
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.06	0.00	0.00	0.04
	17 Type Jr	0.08	0.01	0.00	-0.03
	78 Hrs Sci	0.35	0.12	0.12	0.35
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.06	0.00	0.00	[illegible]
	17 Type Jr	0.08	0.01	0.00	[illegible]
	34 Tot Roll	0.08	0.01	0.00	-0.01
	78 Hrs Sci	0.36	0.13	0.12	0.35

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	75 Hrs Phy Sci	0.34	0.11	0.11	0.34
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	-0.06
	75 Hrs Phy Sci	0.34	0.12	0.11	0.34
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.15	0.02	0.01	0.14
	17 Type Jr	0.19	0.03	0.01	-0.14
	77 Hrs Math	0.37	0.14	0.10	0.32
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.15	0.02	0.01	0.14
	17 Type Jr	0.19	0.03	0.01	-0.14
	34 Tot Roll	0.22	0.05	0.01	-0.06
	77 Hrs Math	0.38	0.14	0.10	0.32

Southwest (N = 182)

	Variable No. and. Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	42 Taught Sci	0.43	0.18	0.18	0.43
	78 Hrs Sci	0.49	0.24	0.06	0.39
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	42 Taught Sci	0.43	0.18	0.18	0.43
	78 Hrs Sci	0.50	0.25	0.07	0.39
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.14	0.02	0.02	0.09
	17 Type Jr	0.14	0.02	0.00	-0.14
	42 Taught Sci	0.44	0.19	0.17	0.43
	78 Hrs Sci	0.50	0.25	0.06	0.39
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.14	0.02	0.02	0.09
	17 Type Jr	0.14	0.02	0.00	-0.14
	34 Tot Roll	0.15	0.02	0.00	0.06
	42 Taught Sci	0.44	0.19	0.17	0.43
	78 Hrs Sci	0.50	0.25	0.06	0.39

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.55	0.31	0.31	0.55
Total Enroll. Forced	34 Tot Roll	0.08	0.01	0.01	0.08
	78 Hrs Sci	0.56	0.31	0.31	0.55
School Type Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.15	0.02	0.00	0.12
	17 Type Jr	0.16	0.02	0.00	0.00
	78 Hrs Sci	0.57	0.33	0.31	0.55
School Type & Total Enroll. Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.15	0.02	0.00	0.12
	17 Type Jr	0.16	0.02	0.00	0.00
	34 Tot Roll	0.17	0.03	0.00	0.08
	78 Hrs Sci	0.58	0.33	0.31	0.55

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	08 Roll Bio	0.43	0.19	0.19	0.43
	80 SCIP Chem TE	0.52	0.27	0.08	0.43
	66 Sci Fac	0.58	0.34	0.07	0.26
	70 Small Classes	0.63	0.39	0.05	-0.21
Total Enroll. Forced	34 Tot Roll	0.28	0.08	0.08	0.28
	80 SCIP Chem TE	0.47	0.22	0.15	0.43
	66 Sci Fac	0.54	0.30	0.07	0.26
	70 Small Classes	0.60	0.36	0.07	-0.21
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.29	0.08	0.08	0.27
	17 Type Jr	0.30	0.09	0.01	-0.29
	80 SCIP Chem TE	0.46	0.21	0.12	0.43
	08 Roll Bio	0.54	0.29	0.07	0.43
	66 Sci Fac	0.59	0.35	0.06	0.26
	70 Small Classes	0.63	0.40	0.05	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.29	0.08	0.08	0.27
	17 Type Jr	0.30	0.09	0.01	-0.29
	34 Tot Roll	0.37	0.14	0.05	0.28
	80 SCIP Chem TE	0.50	0.25	0.11	0.43
	66 Sci Fac	0.56	0.32	0.07	0.26
	70 Small Classes	0.62	0.39	0.07	-0.21

TABLE 35 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.34	0.11	0.11	0.34
	15 Type J-Sr	0.40	0.16	0.05	-0.23
Total Enroll. Forced	34 Tot Roll	0.23	0.05	0.05	0.23
	78 Hrs Sci	0.37	0.14	0.09	0.34
School Type Forced	15 Type J-Sr	0.23	0.05	0.05	-0.23
	16 Type Sr	0.27	0.07	0.02	0.24
	17 Type Jr	0.28	0.08	0.01	-0.06
	78 Hrs Sci	0.42	0.17	0.09	0.34
School Type & Total Enroll. Forced	15 Type J-Sr	0.23	0.05	0.05	-0.23
	16 Type Sr	0.27	0.07	0.02	0.24
	17 Type Jr	0.28	0.08	0.01	-0.06
	34 Tot Roll	0.33	0.11	0.03	0.23
	78 Hrs Sci	0.43	0.18	0.08	0.34

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.29	0.08	0.08	0.29
	36 Age	0.38	0.14	0.06	0.29
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	0.14
	36 Age	0.31	0.09	0.08	0.29
	78 Hrs Sci	0.38	0.15	0.05	0.29
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	0.09
	16 Type Sr	0.18	0.03	0.03	0.10
	17 Type Jr	0.19	0.04	0.00	-0.17
	36 Age	0.34	0.11	0.08	0.29
	78 Hrs Sci	0.41	0.16	0.05	0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	0.09
	16 Type Sr	0.18	0.03	0.03	0.10
	17 Type Jr	0.19	0.04	0.00	-0.17
	34 Tot Roll	0.22	0.05	0.01	0.14
	36 Age	0.35	0.12	0.07	0.29

All Regions Combined (N = 2192)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.33	0.11	0.11	0.33
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	78 Hrs Sci	0.33	0.11	0.10	0.33
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.14	0.02	0.02	0.14
	17 Type Jr	0.14	0.02	0.00	-0.11
	78 Hrs Sci	0.34	0.12	0.10	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.14	0.02	0.02	0.14
	17 Type Jr	0.14	0.02	0.00	-0.11
	34 Tot Roll	0.16	0.03	0.00	0.11
	78 Hrs Sci	0.34	0.12	0.09	0.33

TABLE 36

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER PARTICIPATION IN NATIONAL SCIENCE FOUNDATION INSTITUTES

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	38	Degree Held	0.35	0.12	0.12	0.35
	78	Hrs Sci	0.41	0.17	0.05	0.34
Total Enroll. Forced	34	Tot Roll	0.20	0.04	0.04	0.20
	38	Degree Held	0.37	0.14	0.10	0.35
School Type Forced	15	Type J-Sr	0.08	0.01	0.01	-0.0[illegible]
	16	Type Sr	0.16	0.02	0.02	0.[illegible]
	17	Type Jr	0.17	0.03	0.01	-0.[illegible]
	38	Degree Held	0.38	0.14	0.11	0.[illegible]
School Type & Total Enroll. Forced	15	Type J-Sr	0.08	0.01	0.01	-0.[illegible]
	16	Type Sr	0.16	0.02	0.02	0.[illegible]
	17	Type Jr	0.17	0.03	0.01	-0.[illegible]
	34	Tot Roll	0.23	0.05	0.02	0.20
	38	Degree Held	0.39	0.15	0.10	0.35

Mid[illegible]st (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
[illegible]ables	42	Taught Sci	0.30	0.09	0.09	0.30
[illegible] Enroll. [illegible]	34	Tot Roll	0.03	0.00	0.00	0.03
	42	Taught Sci	0.30	0.09	0.09	0.30
[illegible]ol Type [illegible]	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.13	0.02	0.01	0.13
	17	Type Jr	0.15	0.02	0.01	-0.05
	42	Taught Sci	0.33	0.11	0.08	0.30
School Type & Total Enroll. Forced	15	Type J-Sr	0.05	0.00	0.00	-0.05
	16	Type Sr	0.13	0.02	0.01	0.13
	17	Type Jr	0.15	0.02	0.01	-0.05
	34	Tot Roll	0.15	0.02	0.00	0.03
	42	Taught Sci	0.33	0.11	0.09	0.30

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	75	Hrs Phy Sci	0.32	0.10	0.10	0.32
	76	Hrs Earth	0.39	0.15	0.05	0.23
Total Enroll. Forced	34	Tot Roll	0.02	0.00	0.00	0.02
	75	Hrs Phy Sci	0.32	0.11	0.10	0.32
	76	Hrs Earth	0.39	0.16	0.05	0.23
School Type Forced	15	Type J-Sr	0.07	0.00	0.00	-0.07
	16	Type Sr	0.12	0.01	0.01	0.11
	17	Type Jr	0.16	0.03	0.01	-0.12
	75	Hrs Phy Sci	0.34	0.12	0.09	0.32
	76	Hrs Earth	0.41	0.17	0.05	0.23
School Type & Total Enroll. Forced	15	Type J-Sr	0.07	0.00	0.00	-0.07
	16	Type Sr	0.12	0.01	0.01	0.11
	17	Type Jr	0.16	0.03	0.01	-0.12
	34	Tot Roll	0.16	0.03	0.00	0.02
	75	Hrs Phy Sci	0.34	0.12	0.09	0.32
	76	Hrs Earth	0.41	0.17	0.05	0.23

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	36	Age	0.36	0.13	0.13	0.36
	78	Hrs Sci	0.44	0.20	0.07	0.34
Total Enroll. Forced	34	Tot Roll	0.01	0.00	0.00	0.01
	36	Age	0.36	0.13	0.13	0.36
	78	Hrs Sci	0.46	0.21	0.08	0.34
School Type Forced	15	Type J-Sr	0.04	0.00	0.00	0.04
	16	Type Sr	0.13	0.02	0.02	0.10
	17	Type Jr	0.14	0.02	0.00	-0.14
	36	Age	0.37	0.14	0.12	[illegible]
	78	Hrs Sci	0.45	0.20	0.06	0.34
School Type & Total Enroll. Forced	15	Type J-Sr	0.04	0.00	0.00	0.04
	16	Type Sr	0.13	0.02	0.02	0.10
	17	Type Jr	0.14	0.02	0.00	-0.14
	34	Tot Roll	0.14	0.02	0.00	0.01
	36	Age	0.38	0.14	0.12	0.36
	78	Hrs Sci	0.46	0.21	0.07	0.34
	47	Lecture	0.51	0.26	0.05	-0.24

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78	Hrs Sci	0.33	0.11	0.11	0.33
	10	Roll Physics	0.44	0.20	0.09	0.30
Total Enroll. Forced	34	Tot Roll	0.12	0.02	0.02	0.12
	78	Hrs Sci	0.36	0.13	0.11	0.33
	10	Roll Physics	0.44	0.20	0.07	0.30
School Type Forced	15	Type J-Sr	0.20	0.04	0.04	-0.20
	16	Type Sr	0.21	0.04	0.00	0.17
	17	Type Jr	0.22	0.05	0.01	-0.06
	78	Hrs Sci	0.39	0.15	0.10	0.33
	10	Roll Physics	0.47	0.22	0.07	0.30
Total Type & Total Enroll. Forced	15	Type J-Sr	0.20	0.04	0.04	-0.20
	16	Type Sr	0.21	0.04	0.00	0.17
	17	Type Jr	0.22	0.05	0.01	-0.06
	34	Tot Roll	0.24	0.06	0.01	0.12
	78	Hrs Sci	0.40	0.16	0.10	0.33
	10	Roll Physics	0.47	0.22	0.06	0.30

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78	Hrs Sci	0.28	0.08	0.08	0.28
	65	Admin Supp	0.35	0.12	0.05	0.23
Total Enroll. Forced	34	Tot Roll	0.09	0.01	0.01	0.09
	78	Hrs Sci	0.28	0.08	0.07	0.28
	65	Admin Supp	0.35	0.12	0.05	0.23
School Type Forced	15	Type J-Sr	0.19	0.03	0.03	-0.19
	16	Type Sr	0.24	0.06	0.02	0.19
	17	Type Jr	0.24	0.06	0.00	-0.07
	81	SCIP Earth TE	0.35	0.12	0.06	0.21
	65	Admin Supp	0.42	0.17	0.05	0.23
	75	Hrs Phy Sci	0.47	0.22	0.05	0.22
School Type & Total Enroll. Forced	15	Type J-Sr	0.19	0.03	0.03	-0.19
	16	Type Sr	0.24	0.06	0.02	0.19
	17	Type Jr	0.24	0.06	0.00	-0.07
	34	Tot Roll	0.24	0.06	0.00	0.09
	81	SCIP Earth TE	0.35	0.12	0.07	0.21
	65	Admin Supp	0.42	0.18	0.05	0.23
	75	Hrs Phy Sci	0.47	0.23	0.05	0.22

TABLE 36 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	18 SCIP Use	0.36	0.13	0.13	0.36
	78 Hrs Sci	0.43	0.19	0.06	0.34
Total Enroll. Forced	34 Tot Roll	0.13	0.02	0.02	0.13
	18 SCIP Use	0.36	0.13	0.11	0.36
	78 Hrs Sci	0.43	0.19	0.06	0.34
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.14	0.02	0.01	0.13
	17 Type Jr	0.18	0.03	0.01	-0.07
	18 SCIP Use	0.39	0.15	0.12	0.36
	78 Hrs Sci	0.45	0.21	0.05	0.34
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.14	0.02	0.01	0.13
	17 Type Jr	0.18	0.03	0.01	-0.07
	34 Tot Roll	0.21	0.04	0.01	0.13
	18 SCIP Use	0.39	0.15	0.11	0.36
	78 Hrs Sci	0.45	0.21	0.05	0.34

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All variables Free	42 Taught Sci	0.36	0.13	0.13	0.36
Total Enroll. Forced	34 Tot Roll	0.19	0.04	0.04	0.19
	42 Taught Sci	0.39	0.16	0.12	0.36
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.14	0.02	0.02	0.09
	17 Type Jr	0.15	0.02	0.00	-0.14
	42 Taught Sci	0.38	0.14	0.12	0.36
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.14	0.02	0.02	0.09
	17 Type Jr	0.15	0.02	0.00	-0.14
	34 Tot Roll	0.23	0.05	0.03	0.19
	42 Taught Sci	0.41	0.17	0.11	0.36

All Regions Combined (N = 2192)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	78 Hrs Sci	0.30	0.09	0.09	0.30
	42 Taught Sci	0.37	0.14	0.05	0.29
Total Enroll. Forced	34 Tot Roll	0.12	0.01	0.01	0.12
	78 Hrs Sci	0.31	0.09	0.08	0.30
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.13	0.02	0.01	0.13
	17 Type Jr	0.13	0.02	0.00	-0.10
	78 Hrs Sci	0.31	0.10	0.08	0.30
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.13	0.02	0.01	0.13
	17 Type Jr	0.13	0.02	0.00	-0.10
	34 Tot Roll	0.15	0.02	0.01	0.12
	78 Hrs Sci	0.31	0.10	0.07	0.30

The relationship between NSF Institute participation and college credits in science was eliminated in the Great Lakes region when Total Student Enrollment and/or School Type were forced or partialled out of these variables during stepwise regression analysis.

This could indicate that the correlation between NSF Institute participation and college science credits in the Great Lakes region was reflecting the tendency for NSF participants to be teachers in high schools, which tend to be larger than junior high schools, rather than just the fact that the participants have more hours of science. In fact the best predictor of NSF Institute participation in the Great Lakes was the Highest Degree Held by the Teachers. This relationship was not changed by partialling out School Type or Total Student Enrollment. It would appear that those teachers in this region that tend to pursue advanced degrees also participated in the NSF program. Perhaps the NSF Institute Program and the Degree Granted Program of the colleges and universities holding these institutes were coordinated.

Homogeneous Grouping in Science Classes

The principals were asked if the science classes were grouped homogeneously in their school. If they said yes, a two was recorded; if no, a one was recorded. The means and standard deviations for this variable are given in Table 37. The use of grouping ranges from a low of 65 percent in the Plains region to 90 percent in New England.

TABLE 37

MEANS[a] AND STANDARD DEVIATIONS FOR HOMOGENEOUS GROUPING IN SCIENCE CLASSES

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.53	1.47	1.80	1.70	1.47	1.41	1.30	1.49	1.53
S.D.	0.50	0.50	0.40	0.46	0.50	0.49	0.46	0.50	0.50
N	453	306	129	431	182	83	221	353	2158

[a] yes = 2, no = 1

One variable, Total Student Enrollment, had a significant positive correlation with Homogeneous Grouping in Science Classes. The correlation of these two variables was significant at the ($\alpha \leq 0.001$) level in four of the eight regions. The larger schools tend to group their students for science more than do smaller schools.

In the Southwest region the Use of Local Consultants was the best predictor of grouping and in the Rocky Mountains region the Teacher Ranking of Administrative Support as Important for High Quality Science Program was the best predictor. These variables accounted for 5 to 10 percent of the variance in their respective regions. These results are given in Table 38.

TABLE 38

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF HOMOGENEOUS GROUPING IN SCIENCE CLASSES

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	08 Roll Bio	0.29	0.08	0.08	0.29
Total Enroll. Forced	34 Tot Roll	0.24	0.06	0.04	0.24
School Type Forced	15 Type J-Sr	0.17	0.03	0.03	-0.17
	16 Type Sr	0.17	0.03	0.00	0.12
	17 Type Jr	0.17	0.03	0.00	0.00
	08 Roll Bio	0.32	0.10	0.07	0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.17	0.03	0.03	-0.17
	16 Type Sr	0.17	0.03	0.00	0.12
	17 Type Jr	0.17	0.03	0.00	0.00
	34 Tot Roll	0.26	0.07	0.04	0.24

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.11	0.01	0.01	-0.08
	17 Type Jr	0.11	0.01	0.00	0.11
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.11	0.01	0.01	-0.08
	17 Type Jr	0.11	0.01	0.00	0.11
	34 Tot Roll	0.13	0.02	0.01	0.05

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	34 Tot Roll	0.25	0.06	0.06	0.25
Total Enroll. Forced	34 Tot Roll	0.25	0.06	0.06	0.25
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.02	0.00	0.00	0.02
	17 Type Jr	0.07	0.01	0.00	0.00
	34 Tot Roll	0.27	0.07	0.07	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.02	0.00	0.00	0.02
	17 Type Jr	0.07	0.01	0.00	0.00
	34 Tot Roll	0.27	0.07	0.07	0.25

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	22 Local Cons	0.23	0.05	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.20	0.04	0.04	0.20
	22 Local Cons	0.30	0.09	0.05	0.23
School Type Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.16	0.02	0.00	0.02
	17 Type Jr	0.17	0.03	0.00	0.08
	22 Local Cons	0.29	0.08	0.06	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.16	0.02	0.00	0.02
	17 Type Jr	0.17	0.03	0.00	0.08
	34 Tot Roll	0.24	0.06	0.03	0.20
	22 Local Cons	0.33	0.11	0.05	0.23

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.01
	17 Type Jr	0.07	0.00	0.00	0.02
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.01
	17 Type Jr	0.07	0.00	0.00	0.02
	34 Tot Roll	0.13	0.02	0.01	0.11

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	65 Admin Supp	0.28	0.08	0.08	0.28
	06 Roll GS	0.37	0.14	0.06	0.25
	26 Teach Sci M	0.44	0.19	0.06	0.23
	51 Ind Study	0.49	0.24	0.05	0.25
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	0.09
	65 Admin Supp	0.29	0.08	0.07	0.28
	26 Teach Sci M	0.38	0.14	0.06	0.23
	06 Roll GS	0.46	0.22	0.07	0.25
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.13	0.02	0.00	0.05
	17 Type Jr	0.22	0.05	0.03	0.09
	65 Admin Supp	0.36	0.13	0.08	0.28
	06 Roll GS	0.45	0.20	0.07	0.25
	51 Ind Study	0.52	0.27	0.07	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.14	0.02	0.00	0.05
	17 Type Jr	0.22	0.05	0.03	0.09
	34 Tot Roll	0.22	0.05	0.00	0.09
	65 Admin Supp	0.36	0.13	0.08	0.28
	06 Roll GS	0.45	0.20	0.07	0.25
	51 Ind Study	0.52	0.27	0.07	0.25

TABLE 38 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Roll	0.10	0.01	0.01	0.10
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.10	0.01	0.00	-0.01
	17 Type Jr	0.11	0.01	0.00	0.09
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.10	0.01	0.00	-0.01
	17 Type Jr	0.11	0.01	0.00	0.09
	34 Tot Roll	0.13	0.02	0.01	0.10

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	34 Tot Roll	0.22	0.05	0.05	0.22
Total Enroll. Forced	34 Tot Roll	0.22	0.05	0.05	0.22
School Type Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.08	0.01	0.00	0.00
	17 Type Jr	0.11	0.01	0.01	0.09
	08 Roll Bio	0.25	0.06	0.05	0.17
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.00	0.00	-0.07
	16 Type Sr	0.08	0.01	0.00	0.00
	17 Type Jr	0.11	0.01	0.01	0.09
	34 Tot Roll	0.24	0.06	0.05	0.22

All Regions Combined (N = 2158)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	28 Teach Sci	0.23	0.05	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.19	0.04	0.04	0.19
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.04
	17 Type Jr	0.10	0.01	0.00	0.04
	28 Teach Sci	0.25	0.06	0.05	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.04
	17 Type Jr	0.10	0.01	0.00	0.04
	34 Tot Roll	0.21	0.04	0.03	0.19

Teacher Rankings of Importance of Learning Activities

The teachers were asked to rank learning activities according to their importance in secondary science courses. The activities included were

Lecture
Lecture-Discussion
Small Group Discussion
Science Demonstrations
Instructional Films
Independent Study
Individual Laboratory Activity
Group Laboratory Activity
In-Class Written Assignments
Excursions or Field Studies
Programmed Instruction
Auto-tutorial Instruction
Televised Instruction

From these learning activities the rankings for six were chosen for further analysis. There were

Lecture
Lecture-Discussion
Science Demonstrations
Instructional Films
Individual Laboratory Activity
Group Laboratory Activity

These were chosen on the bases of the rankings obtained from the teachers. The teachers were asked to rank the activity as "most often used," "2nd most often used," "3rd most often used," "used," or "not used." If a learning activity was marked "used" or "not used" by 85 percent or more of the teachers, it was not considered for further analysis. This means that all learning activities ranked in the top three by at least 15 percent of the teachers were chosen for further analyses. The means and standard deviations for the Teacher Rankings of Lecture, Lecture Discussion, Science Demonstration, Instructional Films, Individual Laboratory, and Group Laboratory as Important Learning Activities are given in Tables 39, 40, 41, 42, 43, and 44.

TABLE 39

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF LECTURE AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.07	0.73	1.13	0.88	1.12	0.69	0.75	0.83	0.90
S.D.	1.30	0.98	1.41	1.21	1.34	0.98	1.04	1.15	1.20
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

TABLE 40

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF LECTURE-DISCUSSION AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	3.09	3.11	3.02	3.14	2.97	2.79	2.92	3.12	3.06
S.D.	1.27	1.19	1.31	1.27	1.34	1.36	1.40	1.31	1.29
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

TABLE 41

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF SCIENCE DEMONSTRATIONS AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.17	1.11	1.31	1.55	1.23	1.26	1.10	1.33	1.27
S.D.	1.05	0.91	0.99	1.16	0.95	1.11	0.99	1.08	1.03
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

TABLE 42

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF INSTRUCTIONAL FILMS AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.03	1.08	0.98	0.94	0.93	0.85	0.98	1.19	1.02
S.D.	0.84	0.80	0.76	0.80	0.79	0.68	0.80	0.95	0.83
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

TABLE 43

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF INDIVIDUAL LABORATORY ACTIVITY AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.39	1.49	1.28	1.36	1.46	1.60	1.44	1.03	1.38
S.D.	1.44	1.45	1.37	1.35	1.42	1.49	1.38	1.28	1.40
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

TABLE 44

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF GROUP LABORATORY ACTIVITY AS IMPORTANT LEARNING ACTIVITY

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	2.02	2.26	2.16	1.81	1.81	1.98	2.08	1.73	1.96
S.D.	1.35	1.39	1.37	1.36	1.35	1.43	1.37	1.33	1.37
N	459	313	130	434	182	85	224	362	2189

[a] most often = 4 to not used = 0

Each of the six learning activity variables was used as the dependent variable in separate stepwise regression analyses. The results of these analyses are given in Tables 45, 46, 47, 48, 49, and 50.

In the following section the results for each of these six learning activities will be presented and discussed. The results will include the descriptive information, the correlates and the regression analyses.

The intracorrelations of the rankings of the learning activities were directly affected by the ranking process. If one activity was picked to be marked as "most important" then that limited the response a person could give for the next activity. These responses are not independent. This lack of independence leaves some question as to the alpha level for these correlations.

The correlations among these six learning activities, with no correction made for interdependence, were all negative or not significantly ($\alpha \leq 0.001$) different from zero except for one pair. The relationship between Teacher Ranking of Lecture-Discussion as Important Learning Activity and Teacher Ranking of Science Demonstration as Important Learning Activity was significant and positive ($\alpha \leq 0.001$) in four of the eight regions. Those teachers which ranked lecture-discussion high tended to rank demonstration high.

Lecture

The mean for Teacher Ranking of Lecture as Important Learning Activity ranged from a low of about 0.70 in the Rocky Mountains and Farwest regions to a high of about 1.10 in the New England and Southwest regions. These rankings are in the "used" but not "ranked" as important range. See Table 39, p64. There were no significant correlates for lecture.

The best predictors of Teacher Ranking of Lecture as Important Learning Activity were the rankings for lecture-discussion learning activities, student performance in the laboratory for grading criterion and the importance of test scores for grading. See Table 45, p67.

Lecture-Discussion

The mean for Teacher Ranking of Lecture-Discussion as Important Learning Activity ranged from a low of about 2.80 in the Rocky Mountains region to a

TABLE 45

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF LECTURE AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.22	0.05	0.05	-0.22
Total Enroll. Forced	34 Tot Enll	0.01	0.00	0.00	0.01
	48 Lect Disc	0.22	0.05	0.05	-0.21
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.13	0.02	0.02	0.11
	17 Type Jr	0.13	0.02	0.00	-0.12
	48 Lect Disc	0.27	0.07	0.05	-0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.13	0.02	0.02	0.11
	17 Type Jr	0.13	0.02	0.00	-0.12
	34 Tot Enll	0.14	0.02	0.00	0.01
	48 Lect Disc	0.27	0.07	0.05	-0.22

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Enll	0.05	0.00	0.00	-0.05
School Type Forced	15 Type J-Sr	0.14	0.02	0.02	0.14
	16 Type Sr	0.15	0.02	0.00	-0.01
	17 Type Jr	0.15	0.02	0.00	-0.08
School Type & Total Enroll. Forced	15 Type J-Sr	0.14	0.02	0.02	0.14
	16 Type Sr	0.15	0.02	0.00	-0.01
	17 Type Jr	0.15	0.02	0.00	-0.08
	34 Tot Enll	0.15	0.02	0.00	-0.05

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Enll	0.01	0.00	0.00	0.01
School Type Forced	15 Type J-Sr	0.18	0.03	0.03	0.18
	16 Type Sr	0.18	0.03	0.00	-0.05
	17 Type Jr	0.18	0.03	0.00	-0.02
School Type & Total Enroll. Forced	15 Type J-Sr	0.18	0.03	0.03	0.18
	16 Type Sr	0.18	0.03	0.00	-0.05
	17 Type Jr	0.18	0.03	0.00	-0.02
	34 Tot Enll	0.19	0.03	0.00	0.01

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.27	0.07	0.07	-0.27
	48 Lect Disc	0.40	0.16	0.09	-0.25
	58 G Test	0.46	0.21	0.05	0.16
Total Enroll. Forced	34 Tot Enll	0.10	0.01	0.01	-0.10
	61 Perf Lab	0.28	0.08	0.07	-0.27
	48 Lect Disc	0.40	0.16	0.09	-0.25
	58 G Test	0.46	0.21	0.05	0.16
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.11	0.01	0.00	0.09
	17 Type Jr	0.17	0.03	0.02	-0.07
	61 Perf Lab	0.31	0.10	0.07	-0.27
	48 Lect Disc	0.43	0.19	0.09	-0.25
	89 HRF	0.48	0.23	0.05	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.11	0.01	0.00	0.09
	17 Type Jr	0.17	0.03	0.02	-0.07
	34 Tot Enll	0.23	0.05	0.02	-0.10
	89 HRF	0.36	0.13	0.08	-0.24
	48 Lect Disc	0.41	0.17	0.05	-0.25
	61 Perf Lab	0.49	0.24	0.07	-0.27

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	57 Audio Tut	0.26	0.07	0.07	0.26
	58 G Test	0.34	0.11	0.05	0.22
	48 Lect Disc	0.45	0.20	0.09	-0.14
Total Enroll. Forced	34 Tot Enll	0.03	0.00	0.00	-0.03
	57 Audio Tut	0.26	0.07	0.07	0.26
	58 G Test	0.34	0.11	0.05	0.22
	48 Lect Disc	0.45	0.21	0.09	-0.14
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.08	0.01	0.00	-0.07
	17 Type Jr	0.08	0.01	0.00	0.03
	57 Audio Tut	0.27	0.08	0.07	0.26
	58 G Test	0.35	0.12	0.05	0.22
	48 Lect Disc	0.47	0.22	0.10	-0.14
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.08	0.01	0.00	-0.07
	17 Type Jr	0.08	0.01	0.00	0.03
	34 Tot Enll	0.08	0.01	0.00	-0.03
	57 Audio Tut	0.28	0.08	0.07	0.26
	58 G Test	0.35	0.12	0.05	0.22
	48 Lect Disc	0.47	0.22	0.10	-0.14

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	31 SCIP Bio Enll	0.40	0.16	0.16	0.40
	03 NDEA Eq	0.47	0.22	0.06	-0.18
	56 Prog Inst	0.52	0.28	0.06	0.20
Total Enroll. Forced	34 Tot Enll	0.15	0.02	0.02	0.15
	31 SCIP Bio Enll	0.40	0.16	0.14	0.40
	03 NDEA Eq	0.47	0.22	0.06	-0.18
	56 Prog Inst	0.53	0.28	0.06	0.20
	86 Teach Sci M	0.57	0.33	0.05	0.00
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.39	0.15	0.15	0.36
	17 Type Jr	0.39	0.15	0.00	-0.35
	87 Course Physics	0.47	0.22	0.07	-0.16
	68 Inservice	0.54	0.29	0.07	0.15
	82 SCIP Phys TE	0.59	0.35	0.06	0.21
	03 NDEA Eq	0.63	0.39	0.05	-0.18
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.39	0.15	0.15	0.36
	17 Type Jr	0.39	0.15	0.00	-0.35
	34 Tot Enll	0.39	0.15	0.00	0.15
	87 Course Physics	0.47	0.22	0.07	-0.16
	68 Inservice	0.54	0.29	0.07	0.15
	82 SCIP Phys TE	0.59	0.35	0.06	0.21
	03 NDEA Eq	0.63	0.40	0.05	-0.18

TABLE 45 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	36 Tot Enll	0.01	0.00	0.00	0.01
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.08	0.01	0.01	0.07
	17 Type Jr	0.08	0.01	0.00	-0.07
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.08	0.01	0.01	0.07
	17 Type Jr	0.08	0.01	0.00	-0.07
	36 Tot Enll	0.08	0.01	0.00	0.01

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58 G Test	0.20	0.04	0.04	0.20
	48 Lect Disc	0.30	0.09	0.05	-0.15
Total Enroll. Forced	36 Tot Enll	0.04	0.00	0.00	0.04
	58 G Test	0.20	0.04	0.04	0.20
	48 Lect Disc	0.30	0.09	0.05	-0.15
	61 Perf Lab	0.37	0.14	0.05	-0.17
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.10	0.01	0.01	0.10
	17 Type Jr	0.11	0.01	0.00	-0.09
	43 Movie Proj	0.21	0.05	0.03	-0.19
	58 G Test	0.28	0.08	0.03	0.20
	48 Lect Disc	0.37	0.14	0.06	-0.15
	61 Perf Lab	0.43	0.19	0.05	-0.17
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.10	0.01	0.01	0.10
	17 Type Jr	0.11	0.01	0.00	-0.09
	36 Tot Enll	0.11	0.01	0.00	0.04
	61 Perf Lab	0.21	0.05	0.03	-0.17
	48 Lect Disc	0.32	0.10	0.05	-0.15
	58 G Test	0.39	0.15	0.05	0.20

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58 G Test	0.16	0.03	0.03	0.16
	48 Lect Disc	0.28	0.08	0.05	-0.16
Total Enroll. Forced	36 Tot Enll	0.00	0.00	0.00	0.00
	58 G Test	0.16	0.03	0.03	0.16
	48 Lect Disc	0.28	0.08	0.05	-0.16
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.10	0.01	0.01	0.07
	17 Type Jr	0.10	0.01	0.00	-0.10
	48 Lect Disc	0.20	0.04	0.03	-0.16
	58 G Test	0.30	0.09	0.05	0.16
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.10	0.01	0.01	0.07
	17 Type Jr	0.10	0.01	0.00	-0.10
	36 Tot Enll	0.11	0.01	0.00	0.00
	48 Lect Disc	0.20	0.04	0.03	-0.16
	58 G Test	0.30	0.09	0.05	0.16

TABLE 46

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF LECTURE-DISCUSSION AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N = 459)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.33	0.11	0.11	0.33
	47	Lecture	0.42	0.18	0.07	-0.22
Total Enroll. Forced	34	Tot Enll	0.05	0.00	0.00	0.05
	58	G Test	0.33	0.11	0.11	0.33
	47	Lecture	0.42	0.18	0.07	-0.22
School Type Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.09	0.01	0.01	0.07
	17	Type Jr	0.09	0.01	0.00	-0.09
	58	G Test	0.33	0.11	0.10	0.33
	47	Lecture	0.43	0.18	0.07	-0.22
School Type & Total Enroll. Forced	15	Type J-Sr	0.00	0.00	0.00	0.00
	16	Type Sr	0.09	0.01	0.01	0.07
	17	Type Jr	0.09	0.01	0.00	-0.09
	34	Tot Enll	0.10	0.01	0.00	0.05
	58	G Test	0.34	0.11	0.10	0.33
	47	Lecture	0.43	0.18	0.07	-0.22

Mideast (N = 433)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.35	0.13	0.13	0.35
Total Enroll. Forced	34	Tot Enll	0.03	0.00	0.00	0.03
	58	G Test	0.35	0.13	0.12	0.35
School Type Forced	15	Type J-Sr	0.01	0.00	0.00	-0.01
	16	Type Sr	0.12	0.01	0.01	0.11
	17	Type Jr	0.12	0.02	0.00	-0.08
	58	G Test	0.37	0.14	0.12	0.35
School Type & Total Enroll. Forced	15	Type J-Sr	0.01	0.00	0.00	-0.01
	16	Type Sr	0.12	0.01	0.01	0.11
	17	Type Jr	0.12	0.02	0.00	-0.08
	34	Tot Enll	0.12	0.02	0.00	0.03
	58	G Test	0.37	0.14	0.12	0.35

Farwest (N = 309)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.32	0.11	0.11	0.32
	61	Perf Lab	0.40	0.16	0.05	-0.22
Total Enroll. Forced	34	Tot Enll	0.08	0.01	0.01	0.08
	58	G Test	0.33	0.11	0.10	0.32
	61	Perf Lab	0.40	0.16	0.05	-0.22
School Type Forced	15	Type J-Sr	0.01	0.00	0.00	-0.01
	16	Type Sr	0.07	0.00	0.00	0.06
	17	Type Jr	0.08	0.01	0.00	-0.05
	58	G Test	0.33	0.11	0.10	0.32
	61	Perf Lab	0.40	0.16	0.05	-0.22
School Type & Total Enroll. Forced	15	Type J-Sr	0.01	0.00	0.00	-0.01
	16	Type Sr	0.07	0.00	0.00	0.06
	17	Type Jr	0.08	0.01	0.00	-0.05
	34	Tot Enll	0.10	0.01	0.00	0.08
	58	G Test	0.33	0.11	0.10	0.32
	61	Perf Lab	0.41	0.16	0.05	-0.22

Southwest (N = 182)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.36	0.13	0.13	0.36
	47	Lecture	0.48	0.23	0.10	-0.25
Total Enroll. Forced	34	Tot Enll	0.02	0.00	0.00	0.02
	58	G Test	0.36	0.13	0.13	0.36
	47	Lecture	0.48	0.23	0.09	-0.25
School Type Forced	15	Type J-Sr	0.08	0.00	0.00	-0.08
	16	Type Sr	0.08	0.01	0.01	0.08
	17	Type Jr	0.12	0.01	0.01	-0.05
	58	G Test	0.39	0.15	0.14	0.36
	47	Lecture	0.50	0.25	0.09	-0.25
School Type & Total Enroll. Forced	15	Type J-Sr	0.08	0.00	0.00	-0.08
	16	Type Sr	0.08	0.01	0.01	0.08
	17	Type Jr	0.12	0.01	0.01	-0.05
	34	Tot Enll	0.12	0.01	0.00	0.02
	58	G Test	0.39	0.15	0.14	0.36
	47	Lecture	0.50	0.25	0.09	-0.25

New England (N = 130)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.50	0.25	0.25	0.50
	47	Lecture	0.57	0.32	0.07	-0.14
Total Enroll. Forced	34	Tot Enll	0.06	0.00	0.00	0.06
	58	G Test	0.51	0.26	0.25	0.50
	47	Lecture	0.57	0.32	0.07	-0.14
	27	Teach Sci F	0.62	0.39	0.06	-0.17
School Type Forced	15	Type J-S.	0.07	0.01	0.01	0.07
	16	Type Sr	0.10	0.01	0.01	0.01
	17	Type Jr	0.16	0.02	0.01	-0.03
	58	G Test	0.52	0.27	0.24	0.50
	47	Lecture	0.58	0.34	0.07	-0.14
School Type & Total Enroll. Forced	15	Type J-Sr	0.07	0.01	0.01	0.07
	16	Type Sr	0.10	0.01	0.01	0.01
	17	Type Jr	0.16	0.02	0.01	-0.03
	34	Tot Enll	0.16	0.03	0.00	0.06
	58	G Test	0.52	0.27	0.24	0.50
	47	Lecture	0.59	0.34	0.07	-0.14
	27	Teach Sci F	0.63	0.40	0.06	-0.17

Rocky Mountains (N = 85)

	Variable No. and Abbrev.		Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58	G Test	0.40	0.16	0.16	0.40
	61	Perf Lab	0.52	0.28	0.12	-0.39
	04	ESEA Eq	0.59	0.34	0.07	0.30
	57	Auto Tut	0.63	0.39	0.05	-0.33
	50	Films	0.67	0.45	0.05	0.25
Total Enroll Forced	34	Tot Enll	0.06	0.00	0.00	-0.06
	58	G Test	0.41	0.16	0.16	0.40
	61	Perf Lab	0.52	0.28	0.11	-0.39
	04	ESEA Eq	0.59	0.34	0.07	0.30
	57	Auto Tut	0.63	0.39	0.05	-0.33
	50	Films	0.67	0.45	0.05	0.25
School Type Forced	15	Type J-Sr	0.05	0.00	0.00	0.05
	16	Type Sr	0.07	0.00	0.00	0.02
	17	Type Jr	0.20	0.04	0.03	-0.12
	58	G Test	0.44	0.19	0.15	0.40
	04	ESEA Eq	0.56	0.31	0.12	0.30
	52	Ind Lab	0.62	0.38	0.07	-0.35
	50	Films	0.66	0.44	0.05	0.25
	57	Auto Tut	0.70	0.48	0.05	-0.33
School Type & Total Enroll. Forced	15	Type J-Sr	0.05	0.00	0.00	0.05
	16	Type Sr	0.07	0.00	0.00	0.02
	17	Type Jr	0.20	0.04	0.03	-0.12
	34	Tot Enll	0.20	0.04	0.00	-0.06
	58	G Test	0.44	0.19	0.15	0.40
	04	ESEA Eq	0.56	0.32	0.13	0.30
	52	Ind Lab	0.62	0.38	0.07	-0.35
	50	Films	0.66	0.44	0.05	0.25

TABLE 46 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	71 Ind Study	0.38	0.15	0.15	-0.38
	63 SCIP PE TE	0.46	0.21	0.06	-0.31
	47 Lecture	0.53	0.29	0.05	-0.13
Total Enroll. Forced	34 Tot Enll	0.15	0.02	0.02	-0.15
	71 Ind Study	0.41	0.17	0.15	-0.38
	63 SCIP PE TE	0.50	0.25	0.08	-0.31
	47 Lecture	0.55	0.30	0.05	-0.13
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.20	0.04	0.02	0.06
	17 Type Jr	0.20	0.04	0.00	-0.17
	71 Ind Study	0.42	0.17	0.13	-0.38
	63 SCIP PE TE	0.49	0.24	0.07	-0.31
	47 Lecture	0.54	0.29	0.05	-0.13
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	0.13
	16 Type Sr	0.20	0.04	0.02	0.06
	17 Type Jr	0.20	0.04	0.00	-0.17
	34 Tot Enll	0.24	0.06	0.02	-0.15
	71 Ind Study	0.44	0.19	0.13	-0.38
	63 SCIP PE TE	0.51	0.26	0.06	-0.31
	47 Lecture	0.55	0.31	0.05	-0.13

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58 G Test	0.34	0.11	0.11	0.34
	29 SCIP PE Enll	0.42	0.17	0.06	-0.29
	47 Lecture	0.47	0.22	0.05	-0.15
	61 Perf Lab	0.52	0.27	0.05	-0.29
Total Enroll. Forced	34 Tot Enll	0.01	0.00	0.00	-0.01
	58 G Test	0.34	0.12	0.11	0.34
	29 SCIP PE Enll	0.42	0.17	0.06	-0.29
	47 Lecture	0.47	0.22	0.05	-0.15
	61 Perf Lab	0.53	0.28	0.05	-0.29
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.18	0.03	0.03	0.16
	17 Type Jr	0.18	0.03	0.00	-0.15
	58 G Test	0.36	0.13	0.10	0.34
	61 Perf Lab	0.44	0.20	0.06	-0.29
	47 Lecture	0.52	0.27	0.07	-0.15
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.18	0.03	0.03	0.16
	17 Type Jr	0.18	0.03	0.00	-0.14
	34 Tot Enll	0.18	0.03	0.00	-0.01
	58 G Test	0.37	0.13	0.10	0.34
	61 Perf Lab	0.44	0.20	0.06	-0.29
	47 Lecture	0.52	0.27	0.07	-0.15

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58 G Test	0.34	0.12	0.12	0.34
	47 Lecture	0.41	0.16	0.05	-0.16
Total Enroll. Forced	34 Tot Enll	0.02	0.00	0.00	0.02
	58 G Test	0.34	0.12	0.12	0.34
	47 Lecture	0.41	0.17	0.05	-0.16
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.11	0.01	0.01	0.09
	17 Type Jr	0.11	0.01	0.00	-0.10
	58 G Test	0.35	0.12	0.11	0.34
	47 Lecture	0.42	0.17	0.05	-0.16
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.11	0.01	0.01	0.09
	17 Type Jr	0.11	0.01	0.00	-0.10
	34 Tot Enll	0.11	0.01	0.00	0.02
	58 G Test	0.35	0.12	0.11	0.34
	47 Lecture	0.42	0.17	0.05	-0.16

TABLE 47

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF SCIENCE DEMONSTRATION AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.13	0.02	0.02	-0.07
	17 Type Jr	0.14	0.02	0.00	0.14
	59 Writ Assign	0.26	0.07	0.05	0.21
	07 Course Physics	0.34	0.11	0.05	0.19
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.13	0.02	0.02	-0.07
	17 Type Jr	0.14	0.02	0.00	0.14
	34 Tot Roll	0.14	0.02	0.00	-0.01
	59 Writ Assign	0.26	0.07	0.05	0.21
	07 Course Physics	0.34	0.11	0.05	0.19

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	06 Roll GS	0.28	0.08	0.08	0.28
	63 Interest	0.35	0.13	0.05	0.24
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	0.14
	06 Roll GS	0.29	0.08	0.06	0.28
	63 Interest	0.36	0.13	0.05	0.24
School Type Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.13	0.02	0.01	-0.06
	17 Type Jr	0.13	0.02	0.00	0.12
	06 Roll GS	0.29	0.08	0.06	0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.13	0.02	0.01	-0.06
	17 Type Jr	0.13	0.02	0.00	0.12
	34 Tot Roll	0.22	0.05	0.03	0.14
	[illegible] Part Class	0.32	0.10	0.05	0.24

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.25	0.06	0.06	-0.25
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	0.01
	84 Course Bio	0.25	0.06	0.06	-0.25
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.19	0.04	0.03	-0.19
	17 Type Jr	0.25	0.06	0.02	0.22
	75 Hrs Phy Sci	0.33	0.11	0.05	0.17
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.19	0.04	0.03	-0.19
	17 Type Jr	0.25	0.06	0.02	0.22
	34 Tot Roll	0.25	0.06	0.00	0.01
	75 Hrs Phy Sci	0.34	0.11	0.05	0.17

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.27	0.07	0.07	0.27
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	-0.06
	88 Course Phy Sci	0.27	0.07	0.07	0.27
School Type Forced	15 Type J-Sr	0.16	0.02	0.02	-0.16
	16 Type Sr	0.27	0.07	0.05	-0.14
	17 Type Jr	0.27	0.07	0.00	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.16	0.02	0.02	-0.16
	16 Type Sr	0.27	0.07	0.05	-0.14
	17 Type Jr	0.27	0.07	0.00	0.23
	34 Tot Roll	0.28	0.08	0.01	-0.06

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	79 SCIP Bio TE	0.34	0.11	0.11	-0.34
Total Enroll. Forced	34 Tot Roll	0.13	0.02	0.02	0.13
	84 Course Bio	0.37	0.14	0.12	-0.34
	26 Teach Sci M	0.44	0.19	0.06	-0.04
	54 CL Assign	0.49	0.24	0.05	0.16
School Type Forced	15 Type J-SR	0.01	0.00	0.00	-0.01
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.04	0.00	0.00	0.03
	79 SCIP Bio TE	0.34	0.12	0.11	-0.34
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.04	0.00	0.00	0.03
	34 Tot Roll	0.14	0.02	0.02	0.13
	79 SCIP Bio TE	0.37	0.14	0.12	-0.34
	26 Teach Sci M	0.44	0.19	0.05	-0.04

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.37	0.14	0.14	-0.37
	19 Sci Club	0.45	0.20	0.07	0.13
	84 Course Bio	0.54	0.30	0.09	-0.24
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	-0.03
	61 Perf Lab	0.37	0.14	0.14	-0.37
	84 Course Bio	0.45	0.21	0.07	-0.24
	19 Sci Club	0.55	0.30	0.09	0.13
School Type Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.20	0.04	0.02	-0.09
	17 Type Jr	0.25	0.06	0.02	0.11
	61 Perf Lab	0.45	0.21	0.14	-0.37
	80 SCIP Chem TE	0.52	0.27	0.06	0.20
	78 Hrs Sci	0.57	0.33	0.06	-0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.20	0.04	0.02	-0.09
	17 Type Jr	0.25	0.06	0.02	0.11
	34 Tot Roll	0.25	0.06	0.00	-0.03
	61 Perf Lab	0.46	0.21	0.14	-0.37
	80 SCIP Chem TE	0.52	0.27	0.06	0.20
	78 Hrs Sci	0.57	0.33	0.06	-0.29

TABLE 47 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	18 SCIP USE	0.28	0.08	0.08	-0.28
	48 Lect Disc	0.36	0.13	0.05	0.27
	84 Course Bio	0.42	0.18	0.05	-0.19
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	18 SCIP USE	0.28	0.08	0.08	-0.28
	48 Lect Disc	0.37	0.14	0.06	0.27
	84 Course Bio	0.43	0.19	0.05	-0.19
School Type Forced	15 Type J-Sr	0.11	0.01	0.01	0.11
	16 Type Sr	0.14	0.02	0.01	0.01
	17 Type Jr	0.14	0.02	0.00	-0.11
	18 SCIP USE	0.30	0.09	0.07	-0.28
	77 Hrs Lab	0.37	0.13	0.05	0.19
	48 Lect Disc	0.43	0.18	0.05	0.27
School Type & Total Enroll. Forced	15 Type J-Sr	0.11	0.01	0.01	0.11
	16 Type Sr	0.14	0.02	0.01	0.01
	17 Type Jr	0.14	0.02	0.00	-0.11
	34 Tot Roll	0.14	0.02	0.00	-0.01
	18 SCIP USE	0.31	0.10	0.08	-0.28
	48 Lect Disc	0.38	0.15	0.05	0.27
	84 Course Bio	0.43	0.20	0.06	-0.19

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	84 Course Bio	0.26	0.07	0.07	-0.26
	52 Ind Lab	0.36	0.13	[illegible]	-0.24
Total Enroll. Forced	34 Tot Roll	0.04	0.00	0.00	-0.04
	84 Course Bio	0.26	0.07	0.07	-0.26
	52 Ind Lab	0.36	0.13	0.06	-0.24
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.12	0.01	0.01	-0.10
	17 Type Jr	0.12	0.01	0.00	0.09
	84 Course Bio	0.27	0.07	0.06	-0.26
	52 Ind Lab	0.36	0.13	0.06	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.12	0.01	0.01	-0.10
	17 Type Jr	0.12	0.01	0.00	0.09
	34 Tot Roll	0.12	0.01	0.00	-0.04
	84 Course Bio	0.27	0.07	0.06	-0.26
	52 Ind Lab	0.36	0.13	0.06	-0.24

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	84 Course Bio	0.22	0.05	0.05	-0.21
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.12	0.02	0.01	-0.10
	17 Type Jr	0.12	0.02	0.00	0.12
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.12	0.02	0.01	-0.10
	17 Type Jr	0.12	0.02	0.00	0.12
	34 Tot Roll	0.14	0.02	0.00	0.03

TABLE 48

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF INSTRUCTIONAL FILMS AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N ≈ 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	55 Field Trips	0.28	0.08	0.08	0.28
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	55 Field Trips	0.28	0.08	0.08	0.28
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.06	0.00	0.00	-0.02
	17 Type Jr	0.09	0.01	0.00	0.01
	55 Field Trips	0.29	0.08	0.08	0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.06	0.00	0.00	-0.02
	17 Type Jr	0.09	0.01	0.00	0.01
	34 Tot Roll	0.10	0.01	0.00	0.02
	55 Field Trips	0.30	0.09	0.08	0.28

Mideast (N ≈ 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	55 Field Trips	0.25	0.06	0.06	0.25
Total Enroll. Forced	34 Tot Roll	0.08	0.01	0.01	-0.08
	55 Field Trips	0.26	0.07	0.06	0.25
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.11	0.01	0.01	-0.10
	17 Type Jr	0.11	0.01	0.00	0.06
	55 Field Trips	0.26	0.07	0.06	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.11	0.01	0.01	-0.10
	17 Type Jr	0.11	0.01	0.00	0.06
	34 Tot Roll	0.11	0.01	0.00	-0.08
	55 Field Trips	0.26	0.07	0.06	0.25

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	43 Movie Proj	0.22	0.05	0.05	0.22
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	-0.00
	43 Movie Proj	0.22	0.05	0.05	0.22
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.15	0.02	0.02	-0.13
	17 Type Jr	0.22	0.05	0.02	0.19
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.15	0.02	0.02	-0.13
	17 Type Jr	0.22	0.05	0.02	0.19
	34 Tot Roll	0.22	0.05	0.00	-0.00

Sc[illegible]st (N ≈ 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	43 Movie Proj	0.29	0.08	0.08	0.29
	27 Teach Sci F	0.37	0.14	0.05	0.25
Total Enroll. Forced	34 Tot Roll	0.10	0.01	0.01	0.10
	43 Movie Proj	0.30	0.09	0.08	0.29
	27 Teach Sci F	0.37	0.14	0.05	0.25
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.07	0.00	0.00	0.06
	17 Type Jr	0.10	0.01	0.01	-0.05
	43 Movie Proj	0.30	0.09	0.08	0.29
	87 Teach Sci F	0.38	0.14	0.05	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.07	0.00	0.00	0.06
	17 Type Jr	0.10	0.01	0.01	-0.05
	34 Tot Roll	0.13	0.02	0.01	0.10
	43 Movie Proj	0.30	0.09	0.08	0.29
	87 Teach Sci F	0.38	0.14	0.05	0.25

New England (N ≈ 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	56 Prog Inst	0.30	0.09	0.09	0.30
	58 G Test	0.37	0.14	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	56 Prog Inst	0.30	0.09	0.09	0.30
	58 G Test	0.37	0.14	0.05	0.23
School Type Forced	15 Type J-Sr	0.14	0.02	0.02	0.14
	16 Type Sr	0.15	0.02	0.00	-0.14
	17 Type Jr	0.15	0.02	0.00	0.05
	56 Prog Inst	0.33	0.11	0.09	0.30
	58 G Test	0.40	0.16	0.05	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.14	0.02	0.02	0.14
	16 Type Sr	0.15	0.02	0.00	-0.14
	17 Type Jr	0.15	0.02	0.00	0.05
	34 Tot Roll	0.16	0.02	0.00	-0.01
	56 Prog Inst	0.33	0.11	0.09	0.30
	58 G Test	0.40	0.16	0.05	0.23

Rocky Mountains (N ≈ 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	88 Course Phy Sci	0.31	0.10	0.10	-0.31
	76 Mrs Earth	0.40	0.16	0.06	0.16
	70 Small Classes	0.49	0.24	0.08	0.21
	48 Lect Disc	0.55	0.30	0.06	0.25
Total Enroll. Forced	34 Tot Roll	0.15	0.02	0.02	0.15
	88 Course Phy Sci	0.33	0.11	0.08	-0.31
	76 Mrs Earth	0.41	0.17	0.06	0.16
	70 Small Classes	0.49	0.24	0.07	0.21
	48 Lect Disc	0.55	0.30	0.06	0.25
School Type Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.17	0.03	0.01	0.12
	17 Type Jr	0.17	0.03	0.00	-0.04
	88 Phy Sci	0.39	0.15	0.12	-0.31
	70 Small Classes	0.48	0.23	0.08	0.21
	76 Mrs Earth	0.52	0.28	0.04	0.16
	48 Lect Disc	0.58	0.33	0.06	0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.15	0.02	0.02	-0.15
	16 Type Sr	0.17	0.03	0.01	0.12
	17 Type Jr	0.17	0.03	0.00	-0.04
	34 Tot Roll	0.20	0.04	0.01	0.15
	88 Phy Sci	0.39	0.15	0.12	-0.31
	70 Small Classes	0.48	0.23	0.08	0.21
	76 Mrs Earth	0.52	0.28	0.04	0.16
	46 Lect Disc	0.58	0.33	0.06	0.25

TABLE 48 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	55 Field Trips	0.26	0.07	0.07	0.26
	73 Satisfaction	0.34	0.12	0.05	-0.21
Total Enroll. Forced	34 Tot Enll	0.07	0.00	0.00	0.07
	55 Field Trips	0.27	0.07	0.07	0.26
	73 Satisfaction	0.35	0.12	0.05	-0.21
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.21	0.04	0.04	0.18
	17 Type Jr	0.21	0.04	0.00	-0.18
	55 Field Trips	0.33	0.11	0.07	0.26
	73 Satisfaction	0.40	0.16	0.05	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.21	0.04	0.04	0.18
	17 Type Jr	0.21	0.04	0.00	-0.18
	34 Tot Enll	0.21	0.04	0.00	0.07
	55 Field Trips	0.33	0.11	0.07	0.26
	73 Satisfaction	0.40	0.16	0.05	-0.21

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	43 Movie Proj	0.31	0.10	0.10	0.31
Total Enroll. Forced	34 Tot Enll	0.04	0.00	0.00	-0.04
	43 Movie Proj	0.31	0.10	0.10	0.31
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.01	0.01	-0.11
	17 Type Jr	0.12	0.01	0.00	0.10
	43 Movie Proj	0.33	0.11	0.09	0.31
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.01	0.01	-0.11
	17 Type Jr	0.12	0.01	0.00	0.10
	34 Tot Enll	0.12	0.01	0.00	-0.04
	43 Movie Proj	0.33	0.11	0.09	0.31

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	43 Movie Proj	0.24	0.06	0.06	0.24
Total Enroll. Forced	34 Tot Enll	0.00	0.00	0.00	-0.00
	43 Movie Proj	0.24	0.06	0.06	0.24
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.04	0.00	0.00	-0.04
	17 Type Jr	0.04	0.00	0.00	0.03
	43 Movie Proj	0.25	0.06	0.06	0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.04	0.00	0.00	-0.04
	17 Type Jr	0.04	0.00	0.00	0.03
	34 Tot Enll	0.04	0.00	0.00	-0.00
	43 Movie Proj	0.25	0.06	0.06	0.24

TABLE 49

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF INDIVIDUAL LABORATORY AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	53 Group Lab	0.39	0.15	0.15	-0.39
	61 Perf Lab	0.56	0.31	0.16	0.32
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	53 Group Lab	0.40	0.16	0.16	-0.39
	61 Perf Lab	0.57	0.32	0.16	0.32
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.03	0.00	0.00	-0.01
	17 Type Jr	0.03	0.00	0.00	0.02
	53 Group Lab	0.39	0.16	0.15	-0.39
	61 Perf Lab	0.56	0.32	0.16	0.32
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.03	0.00	0.00	-0.01
	17 Type Jr	0.03	0.00	0.00	0.02
	34 Tot Roll	0.07	0.01	0.00	0.06
	53 Group Lab	0.40	0.16	0.16	-0.39
	61 Perf Lab	0.57	0.33	0.16	0.32

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.34	0.11	0.11	0.34
	53 Group Lab	0.48	0.23	0.12	-0.20
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	-0.03
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.49	0.24	0.12	-0.20
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.07	0.00	0.00	0.07
	17 Type Jr	0.07	0.01	0.00	-0.05
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.48	0.23	0.12	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.07	0.00	0.00	0.07
	17 Type Jr	0.07	0.01	0.00	-0.05
	34 Tot Roll	0.09	0.01	0.00	-0.03
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.49	0.24	0.12	-0.20

Farwest (N = 309)

	Variable No. and abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.52	0.27	0.17	-0.28
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	0.01
	61 Perf Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.52	0.27	0.17	-0.28
School Type Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.17	0.03	0.01	0.14
	17 Type Jr	0.17	0.03	0.00	-0.11
	61 Perf Lab	0.35	0.12	0.09	0.32
	53 Group Lab	0.54	0.29	0.17	-0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.13	0.02	0.02	-0.13
	16 Type Sr	0.17	0.03	0.01	0.14
	17 Type Jr	0.17	0.03	0.00	-0.11
	34 Tot Roll	0.18	0.03	0.00	0.01
	61 Perf Lab	0.35	0.12	0.09	0.32
	53 Group Lab	0.54	0.30	0.17	-0.28

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.31	0.09	0.09	0.31
	53 Group Lab	0.50	0.25	0.15	-0.28
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	61 Perf Lab	0.31	0.10	0.10	0.31
	53 Group Lab	0.50	0.25	0.15	-0.28
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.05	0.00	0.00	0.04
	17 Type Jr	0.08	0.01	0.00	-0.03
	61 Perf Lab	0.31	0.10	0.09	0.31
	53 Group Lab	0.50	0.25	0.16	-0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.05	0.00	0.00	0.04
	17 Type Jr	0.08	0.01	0.00	-0.03
	34 Tot Roll	0.08	0.01	0.00	0.03
	61 Perf Lab	0.31	0.10	0.09	0.31
	53 Group Lab	0.50	0.25	0.15	-0.28

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.33	0.11	0.11	0.33
	53 Group Lab	0.46	0.21	0.10	-0.21
	51 Ind Study	0.55	0.31	0.09	0.26
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	-0.06
	61 Perf Lab	0.34	0.12	0.11	0.33
	53 Group Lab	0.47	0.22	0.11	-0.21
	51 Ind Study	0.57	0.32	0.10	0.26
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.12	0.01	0.01	0.00
	61 Perf Lab	0.36	0.13	0.12	0.33
	53 Group Lab	0.48	0.23	0.10	-0.21
	51 Ind Study	0.56	0.31	0.08	0.26
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.12	0.01	0.01	0.00
	34 Tot Roll	0.13	0.02	0.00	-0.06
	61 Perf Lab	0.37	0.13	0.12	0.33
	53 Group Lab	0.49	0.24	0.11	-0.21
	51 Ind Study	0.57	0.32	0.08	0.26

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.50	0.25	0.25	0.50
	53 Group Lab	0.59	0.35	0.10	-0.12
	73 Satisfaction	0.66	0.43	0.08	0.36
	48 Lect Disc	0.71	0.50	0.07	-0.35
Total Enroll. Forced	34 Tot Roll	0.18	0.03	0.03	0.18
	61 Perf Lab	0.51	0.26	0.22	0.50
	53 Group Lab	0.61	0.37	0.11	-0.12
	73 Satisfaction	0.66	0.44	0.07	0.36
	48 Lect Disc	0.71	0.51	0.07	-0.35
	64 Innovation	0.74	0.55	0.05	-0.15
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.24	0.06	0.05	0.24
	17 Type Jr	0.26	0.07	0.01	-0.16
	61 Perf Lab	0.53	0.28	0.21	0.50
	53 Group Lab	0.62	0.38	0.10	-0.12
	73 Satisfaction	0.67	0.45	0.07	0.36
	48 Lect Disc	0.73	0.53	0.08	-0.35
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.24	0.06	0.05	0.24
	17 Type Jr	0.26	0.07	0.01	-0.16
	34 Tot Roll	0.27	0.07	0.01	0.18
	61 Perf Lab	0.53	0.28	0.21	0.50
	53 Group Lab	0.63	0.39	0.11	-0.12
	73 Satisfaction	0.68	0.46	0.06	0.36
	48 Lect Disc	0.73	0.53	0.08	-0.35

TABLE 49 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	53 Group Lab	0.42	0.17	0.17	-0.42
	61 Perf Lab	0.53	0.28	0.11	0.23
	30 SCIP SS Roll	0.60	0.37	0.08	0.23
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	53 Group Lab	0.43	0.18	0.18	-0.42
	61 Perf Lab	0.54	0.29	0.11	0.23
	30 SCIP SS Roll	0.61	0.37	0.08	0.23
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.05	0.00	0.00	-0.03
	17 Type Jr	0.10	0.01	0.01	0.07
	53 Group Lab	0.42	0.18	0.17	-0.42
	61 Perf Lab	0.55	0.30	0.12	0.23
	30 SCIP SS Roll	0.61	0.38	0.08	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.05	0.00	0.00	-0.03
	17 Type Jr	0.10	0.01	0.01	0.07
	34 Tot Roll	0.11	0.01	0.00	0.05
	53 Group Lab	0.43	0.19	0.17	-0.42
	61 Perf Lab	0.56	0.31	0.12	0.23
	30 SCIP SS Roll	0.62	0.38	0.07	0.23

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.40	0.16	0.16	0.40
	53 Group Lab	0.47	0.22	0.06	-0.08
Total Enroll. Forced	34 Tot Roll	0.17	0.03	0.03	0.17
	61 Perf Lab	0.41	0.17	0.14	0.40
	53 Group Lab	0.48	0.23	0.07	-0.08
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.10	0.01	0.01	0.08
	17 Type Jr	0.10	0.01	0.00	-0.07
	61 Perf Lab	0.40	0.16	0.15	0.40
	53 Group Lab	0.48	0.23	0.06	-0.08
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	0.02
	16 Type Sr	0.10	0.01	0.01	0.08
	17 Type Jr	0.10	0.01	0.00	-0.07
	34 Tot Roll	0.18	0.03	0.02	0.17
	61 Perf Lab	0.42	0.17	0.14	0.40
	53 Group Lab	0.49	0.24	0.07	-0.08

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.34	0.12	0.12	0.34
	53 Group Lab	0.51	0.26	0.14	-0.24
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.51	0.26	0.14	-0.24
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.08	0.01	0.00	0.08
	17 Type Jr	0.08	0.01	0.00	-0.04
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.51	0.26	0.14	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.08	0.01	0.00	0.08
	17 Type Jr	0.08	0.01	0.00	-0.04
	34 Tot Roll	0.08	0.01	0.00	0.05
	61 Perf Lab	0.34	0.12	0.11	0.34
	53 Group Lab	0.51	0.26	0.14	-0.24

TABLE 50

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF GROUP LABORATORY AS IMPORTANT LEARNING ACTIVITY

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.39	0.15	0.15	-0.39
	61 Perf Lab	0.52	0.27	0.12	0.20
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	52 Ind Lab	0.40	0.16	0.16	-0.39
	61 Perf Lab	0.53	0.28	0.12	0.20
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.08	0.01	0.00	0.05
	17 Type Jr	0.13	0.02	0.01	0.05
	52 Ind Lab	0.41	0.17	0.15	-0.39
	61 Perf Lab	0.53	0.28	0.11	0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	-0.08
	16 Type Sr	0.08	0.01	0.00	0.05
	17 Type Jr	0.13	0.02	0.01	0.05
	34 Tot Roll	0.13	0.02	0.00	0.06
	52 Ind Lab	0.42	0.17	0.16	-0.39
	61 Perf Lab	0.54	0.29	0.12	0.20

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.36	0.13	0.13	0.36
	52 Ind Lab	0.49	0.24	0.12	-0.20
Total Enroll. Forced	34 Tot Roll	0.08	0.01	0.01	-0.08
	61 Perf Lab	0.37	0.13	0.13	0.36
	52 Ind Lab	0.50	0.25	0.12	-0.20
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.01	0.01	-0.11
	17 Type Jr	0.12	0.02	0.00	0.11
	61 Perf Lab	0.39	0.15	0.14	0.36
	52 Ind Lab	0.52	0.27	0.11	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.12	0.01	0.01	-0.11
	17 Type Jr	0.12	0.02	0.00	0.11
	34 Tot Roll	0.13	0.02	0.00	-0.08
	61 Perf Lab	0.39	0.16	0.14	00.36
	52 Ind Lab	0.52	0.27	0.11	-0.20

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.32	0.10	0.10	0.32
	52 Ind Lab	0.52	0.27	0.17	-0.28
Total Enroll. Forced	34 Tot Roll	0.07	0.00	0.00	0.07
	61 Perf Lab	0.32	0.10	0.10	0.32
	52 Ind Lab	0.52	0.27	0.17	-0.28
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.08	0.01	0.01	0.07
	17 Type Jr	0.14	0.02	0.01	-0.11
	61 Perf Lab	0.34	0.11	0.10	0.32
	52 Ind Lab	0.54	0.29	0.17	-0.28
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.08	0.01	0.01	0.07
	17 Type Jr	0.14	0.02	0.01	-0.11
	34 Tot Roll	0.15	0.02	0.00	0.07
	61 Perf Lab	0.34	0.12	0.10	0.32
	52 Ind Lab	0.54	0.29	0.17	-0.28

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.30	0.09	0.09	0.30
	52 Ind Lab	0.50	0.25	0.15	-0.28
	56 Prog Inst	0.54	0.29	0.05	0.22
Total Enroll. Forced	34 Tot Roll	0.22	0.05	0.05	0.22
	52 Ind Lab	0.37	0.13	0.08	-0.28
	61 Perf Lab	0.51	0.26	0.13	0.30
School Type Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.11	0.01	0.00	0.04
	17 Type Jr	0.14	0.02	0.01	0.05
	61 Perf Lab	0.33	0.11	0.09	0.30
	52 Ind Lab	0.51	0.26	0.15	-0.28
	56 Prog Inst	0.55	0.31	0.05	0.29
School Type & Total Enroll. Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.11	0.01	0.00	0.04
	17 Type Jr	0.14	0.02	0.01	0.05
	34 Tot Roll	0.25	0.06	0.04	0.22
	52 Ind Lab	0.38	0.15	0.08	-0.28
	61 Perf Lab	0.52	0.27	0.13	0.30

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.29	0.08	0.08	0.29
	52 Ind Lab	0.43	0.19	0.11	-0.21
	55 Field Trips	0.49	0.24	0.05	0.22
Total Enroll. Forced	34 Tot Roll	0.12	0.01	0.01	-0.12
	61 Perf Lab	0.31	0.10	0.08	0.29
	52 Ind Lab	0.46	0.21	0.11	-0.21
	55 Field Trips	0.51	0.26	0.05	0.22
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.12	0.01	0.01	-0.05
	17 Type Jr	0.17	0.03	0.01	0.15
	61 Perf Lab	0.32	0.10	0.07	0.29
	52 Ind Lab	0.45	0.21	0.10	-0.21
	57 Auto Tut	0.50	0.25	0.05	0.20
School Type & Total Enroll Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.12	0.01	0.01	-0.05
	17 Type Jr	0.17	0.03	0.01	0.15
	34 Tot Roll	0.20	0.04	0.01	-0.12
	61 Perf Lab	0.34	0.11	0.07	0.29
	52 Ind Lab	0.47	0.22	0.11	-0.21
	57 Auto Tut	0.52	0.27	0.05	0.20

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.36	0.13	0.13	0.36
	52 Ind Lab	0.50	0.25	0.12	-0.12
	73 Satisfaction	0.55	0.30	0.06	0.22
	48 Lect Disc	0.60	0.36	0.05	-0.23
	75 Hrs Phy Sci	0.65	0.42	0.06	-0.21
	54 Class Assign	0.69	0.47	0.05	-0.21
Total Enroll. Forced	34 Tot Roll	0.18	0.03	0.03	0.18
	61 Perf Lab	0.37	0.14	0.11	0.36
	52 Ind Lab	0.52	0.27	0.13	-0.12
	75 Hrs Phy Sci	0.57	0.32	0.06	-0.21
	54 Class Assign	0.62	0.38	0.06	-0.21
	48 Lect Disc	0.65	0.43	0.05	-0.23
	73 Satisfaction	0.70	0.49	0.06	0.22
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.03	0.00	0.00	-0.00
	17 Type Jr	0.05	0.00	0.00	-0.00
	61 Perf Lab	0.37	0.14	0.14	0.36
	52 Ind Lab	0.51	0.26	0.12	-0.12
	73 Satisfaction	0.56	0.31	0.05	0.22
	48 Lect Disc	0.61	0.38	0.06	-0.23
	75 Hrs Phy Sci	0.66	0.44	0.06	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.03	0.00	0.00	-0.00
	17 Type Jr	0.05	0.00	0.00	-0.00
	34 Tot Roll	0.21	0.04	0.04	0.18
	61 Perf Lab	0.41	0.17	0.13	0.36
	52 Ind Lab	0.55	0.30	0.13	-0.12
	75 Hrs Phy Sci	0.59	0.35	0.05	-0.21
	54 Class Assign	0.64	0.41	0.06	-0.21
	60 Part Class	0.68	0.46	0.05	-0.26

TABLE 50 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	58 Ind Lab	0.42	0.17	0.17	-0.42
	61 Perf Lab	0.53	0.28	0.10	0.22
Total Enroll. Forced	34 Tot Roll	0.12	0.01	0.01	0.12
	58 Ind Lab	0.44	0.19	0.18	-0.42
	61 Perf Lab	0.54	0.29	0.10	0.22
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.05	0.00	0.00	0.02
	17 Type Jr	0.14	0.02	0.02	-0.09
	58 Ind Lab	0.43	0.18	0.16	-0.42
	61 Perf Lab	0.54	0.29	0.10	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.05	0.00	0.00	0.02
	17 Type Jr	0.14	0.02	0.02	-0.09
	34 Tot Roll	0.20	0.04	0.02	0.12
	58 Ind Lab	0.46	0.21	0.17	-0.42
	61 Perf Lab	0.56	0.31	0.10	0.22

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.50	0.25	0.25	0.50
	58 Ind Lab	0.55	0.30	0.06	-0.08
Total Enroll. Forced	34 Tot Roll	0.14	0.02	0.02	0.14
	61 Perf Lab	0.50	0.25	0.23	0.50
	58 Ind Lab	0.56	0.31	0.06	-0.08
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.06	0.00	0.00	0.01
	17 Type Jr	0.14	0.02	0.02	0.02
	61 Perf Lab	0.51	0.26	0.24	0.50
	58 Ind Lab	0.56	0.31	0.06	-0.08
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.06	0.00	0.00	0.01
	17 Type Jr	0.14	0.02	0.02	0.02
	34 Tot Roll	0.19	0.04	0.02	0.14
	61 Perf Lab	0.51	0.26	0.22	0.50
	58 Ind Lab	0.57	0.32	0.06	-0.08

All Regions Combined (N = 2189)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.33	0.11	0.11	0.33
	58 Ind Lab	0.50	0.25	0.14	-0.24
Total Enroll. Forced	34 Tot Roll	0.07	0.01	0.01	0.07
	61 Perf Lab	0.34	0.11	0.11	0.33
	58 Ind Lab	0.50	0.25	0.14	-0.24
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.06	0.00	0.00	0.01
	61 Perf Lab	0.34	0.11	0.11	0.33
	58 Ind Lab	0.50	0.25	0.14	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	-0.03
	16 Type Sr	0.03	0.00	0.00	0.03
	17 Type Jr	0.06	0.00	0.00	0.01
	34 Tot Roll	0.09	0.01	0.00	0.07
	61 Perf Lab	0.34	0.12	0.11	0.33
	58 Ind Lab	0.51	0.26	0.14	-0.24

high of about 3.15 in the Mideast. The values are in the "2nd most important" range. See Table 40, p65.

Teacher Ranking of Lecture-Discussion as Important Learning Activity had a positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Test Scores as Important Grading Method (all eight regions)

and negative correlation ($\alpha \leq 0.001$) with

-Teacher Ranking of Student Performance in Laboratory as Important Grading Method

-Teaching Experience Using Physical Science SCIP Materials

These results can be interpreted to mean that those teachers who favor use of lecture-discussion for learning activities tend to favor the use of test scores for grading. They tend to consider laboratory performance of lesser importance. Also the teacher using SCIP materials for teaching physical science tend not to rank lecture-discussion as high as those teachers using other than the SCIP materials.

The best predictors of Teacher Ranking of Lecture-Discussion as Important Learning Activity were the rankings for lecture as important learning activity and for use of test scores for grading. See Table 46, p69.

Those teachers who ranked lecture high tended to rank lecture-discussion lower and visa versa. This is a result to be expected due to the interdependence of the rankings. A high ranking for either lecture or lecture-discussion was also related to a preference for use of test scores as a grading criterion and lower rankings for importance of laboratory performance as a grading criterion.

Science Demonstrations

The mean for Teacher Ranking of Science Demonstrations as Important Learning Activity ranged from a low of about 1.10 in the Plains and Farwest to a high of about 1.50 in the Mideast. These rankings are in the "used" to "3rd most important" range. See Table 41, p65.

Teacher Ranking of Science Demonstrations as Important Learning Activity had a positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Student Participation in Class as Important Grading Method

and negative correlation ($\alpha \leq 0.001$) with

-Use of Science Course Improvement Projects

The teacher who ranked science demonstrations high also ranked the importance of student participation in class for grading purposes high.

Teachers who had used SCIP materials, particularly in biology at the tenth grade level, considered science demonstration to be of less importance than other teachers.

There were no consistent predictors of the rank of importance of science demonstrations across the regions. The most frequent predictor was Biology Course Chosen for This Survey. The weight of this variable in prediction of science demonstration importance was negative and appeared most consistently in the Farwest, Rocky Mountains, Plains, and Southeast regions. In those schools sampled, when the selected teacher was a biology teacher, the rank of importance for science demonstrations was lower than for teachers of other science areas. See Table 47, p71.

Instructional Films

The means for Teacher Ranking of Instructional Films as Important Learning Activity ranged from a low of about 0.85 in the Rocky Mountains region to a high of about 1.10 in the Farwest. These rankings were in the "not used" category. See Table 42, p65.

Teacher Ranking of Instructional Films as Important Learning Activity had a positive correlation ($\alpha \leq 0.001$) with

Use of Motion Picture Projector

Those teachers which used films tended to rank their importance higher than those who did not use films. There were no negative correlates.

The most frequent predictors of Teacher Ranking of Instructional Films as Important Learning Activity were the Use of Motion Picture Projector and Teacher Ranking of Excursions and Field Trips as Important Learning Activity. There appears to be a tendency for teachers who favor an outside media source for learning activities to favor more than one such activity. In the Great Lakes, Mideast, and Plains regions the importance of films and field trips were related. In the New England region the best predictor of the ranking for films was the ranking for programmed instruction. Perhaps some teachers or schools could be identified as "innovative" or as situations where a variety of resources beyond the teacher and the textbook are considered of high importance. See Table 48, p73.

Individual Laboratory Activity

The means for Teacher Ranking of Individual Laboratory Activity as Important Learning Activity ranged from a low of about 1.00 in the Southeast to a high of about 1.60 in the Rocky Mountains and Great Lakes regions. These rankings are in the "not used" to "3rd most important" range. See Table 43, p65.

Teacher Ranking of Individual Laboratory as Important Learning Activity had positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Student Performance in Laboratory as Important Grading Method (all eight regions)

+Teacher Satisfaction with Science
Teaching as a Career

Those teachers who considered individual laboratory activities important also considered student performance in the laboratory as an important criterion for grading. These teachers also tend to be more satisfied with teaching as a career than teachers who did not rank individual laboratory activities high. Less than 8 percent of the responding teachers indicated any dissatisfaction with teaching as a career. There were no negative correlates other than those learning activity rankings previously mentioned.

Group Laboratory Activity

The means for Teacher Ranking of Group Laboratory Activity as Important Learning Activity ranged from a low of about 1.75 in the Southeast to a high of about 2.25 in the Farwest. These rankings are in the "3rd most important" to the "2nd most important" range. See Table 44, p69.

Teacher Ranking of Group Laboratory as Important Learning Activity had a positive correlation ($\alpha \leq 0.001$) with

Teacher Ranking of Student Performance in Laboratory as
Important Grading Method (all eight regions)

Teachers who favored group laboratory activities also considered student performance in the laboratory as an important grading criterion. There were no negative correlates other than the rankings of other learning activities previously discussed.

The relationship between the rankings of individual laboratory and group laboratory are negative due to the dependence in the ranking procedure. The best predictor of either the group or individual laboratory rankings was the Teacher Ranking of Student Performance in Laboratory as Important Grading Method. This was true for all regions. Teacher's preference for laboratory activities and preferences for evaluation criteria for students were consistent. See Tables 49, p75, and 50, p77.

Teacher Rankings of Importance of Grading Methods

The teachers were asked to rank grading methods according to their importance in secondary science courses. The grading methods included were

Test Scores
Written Assignments
Student Participation in Class Discussion
Student Performance in Laboratory Activity
Student Performance in Science Projects
Student Interest in Science

From these grading methods, the ranking for four were chosen for further analysis. These were

Test Scores
Written Assignments
Student Participation in Class Discussion
Student Performance in Laboratory Activity

These were chosen on the basis of the rankings obtained from the teachers. The teachers were asked to rank each grading method as "most often used," "2nd most often used," "3rd most often used," "used," or "not used." If a grading method was ranked "used" or "not used" by 85 percent or more of the teachers it was not considered for further analysis. This means that only those grading methods ranked in the top three by at least 15 percent of the teachers were considered for further analysis.

The means and standard deviations for the Teacher Rankings of Test Scores, Written Assignments, Student Participation in Class Discussion, and Student Performance in Laboratory Activity as Important Grading Methods are given in Tables 51, 52, 53, and 54.

TABLE 51

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF TEST SCORES AS IMPORTANT GRADING METHOD

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	3.45	3.28	3.54	3.44	3.20	3.00	3.40	3.26	3.35
S.D.	1.04	1.08	0.99	1.05	1.15	1.29	1.10	1.23	1.11
N	454	309	126	430	180	85	221	357	2162

[a] most often = 4 to not used = 0

TABLE 52

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER RANKING OF WRITTEN ASSIGNMENTS AS IMPORTANT GRADING METHOD

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.92	2.15	1.29	1.57	2.12	2.27	2.05	1.87	1.88
S.D.	1.37	1.22	1.25	1.26	1.37	1.29	1.30	1.35	1.33
N	454	309	126	430	180	85	221	357	2162

[a] most often = 4 to not used = 0

TABLE 53

MEANS^{a} AND STANDARD DEVIATIONS FOR TEACHER RANKING OF STUDENT PARTICIPATION IN CLASS DISCUSSION AS IMPORTANT GRADING METHOD

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	1.11	0.73	1.38	1.49	1.04	0.84	0.91	1.44	1.17
S.D.	1.23	1.09	1.28	1.35	1.30	1.08	1.13	1.35	1.27
N	454	309	126	430	180	85	221	357	2162

[a] most often = 4 to not used = 0

TABLE 54

MEANS^{a} AND STANDARD DEVIATIONS FOR TEACHER RANKING OF STUDENT PERFORMANCE IN LABORATORY ACTIVITY AS IMPORTANT GRADING METHOD

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	2.32	2.50	2.48	2.13	2.22	2.06	2.14	1.79	2.19
S.D.	1.25	1.25	1.23	1.37	1.21	1.47	1.28	1.48	1.34
N	454	309	126	430	180	85	221	357	2162

[a] most often = 4 to not used = 0

Each of the four grading methods variables was used as the dependent variable in separate stepwise regression analyses. The results of these analyses are given in Tables 55, 56, 57, and 58.

In the following section the results for each of the four grading methods will be presented and discussed. The results will include the descriptive information, the correlates and the regression analyses.

The intracorrelation of the rankings of the grading methods were directly effected by the ranking process. The selection of one activity as the "most used" automatically eliminated it as being ranked in any other category. Therefore these variables are not independent. This lack of independence does influence the correlation coefficients. The intracorrelations are all either not significantly different from zero or negative ($\alpha \leq 0.001$) without any correction for lack of independence.

Test Scores

The means for Teacher Ranking of Test Scores as Important Grading Method were very uniform across regions. The rankings range from a mean of about 3.00 in the Rocky Mountains to about 3.50 in the New England region. These means represent a ranking of "2nd most used" to "most used." See Table 51, p82.

TABLE 55

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF TEST SCORES AS IMPORTANT GRADING METHOD

Great Lakes (N ≈ 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.33	0.11	0.11	0.33
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	48 Lect Disc	0.33	0.11	0.11	0.33
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.17	0.03	0.03	0.14
	17 Type Jr	0.17	0.03	0.00	-0.15
	48 Lect Disc	0.36	0.13	0.10	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.17	0.03	0.03	0.14
	17 Type Jr	0.17	0.03	0.00	-0.15
	34 Tot Roll	0.17	0.03	0.00	0.03
	48 Lect Disc	0.36	0.13	0.10	0.33

Mideast (N ≈ 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.35	0.13	0.13	0.35
	47 Lecture	0.42	0.18	0.05	0.18
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	48 Lect Disc	0.35	0.13	0.12	0.35
	47 Lecture	0.42	0.18	0.05	0.18
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.04	0.00	0.00	-0.02
	17 Type Jr	0.07	0.00	0.00	0.01
	48 Lect Disc	0.36	0.13	0.13	0.35
	47 Lecture	0.42	0.18	0.05	0.18
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.04	0.00	0.00	-0.02
	17 Type Jr	0.07	0.00	0.00	0.01
	34 Tot Roll	0.07	0.01	0.00	0.03
	48 Lect Disc	0.36	0.13	0.13	0.35
	47 Lecture	0.43	0.18	0.05	0.18

Farwest (N ≈ 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.32	0.11	0.11	0.32
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	48 Lect Disc	0.34	0.11	0.10	0.32
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.20	0.04	0.04	0.19
	17 Type Jr	0.21	0.04	0.00	-0.21
	48 Lect Disc	0.38	0.14	0.10	0.32
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.20	0.04	0.04	0.19
	17 Type Jr	0.21	0.04	0.00	-0.21
	34 Tot Roll	0.22	0.05	0.00	0.11
	48 Lect Disc	0.38	0.14	0.10	0.32

Southwest (N ≈ 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.36	0.13	0.13	0.36
	47 Lecture	0.44	0.20	0.07	0.16
	60 Part Class	0.50	0.25	0.05	-0.20
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	-0.09
	48 Lect Disc	0.37	0.14	0.13	0.36
	47 Lecture	0.45	0.20	0.06	0.16
	60 Part Class	0.50	0.25	0.05	-0.20
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.10	0.01	0.01	0.00
	48 Lect Disc	0.39	0.15	0.14	0.36
	47 Lecture	0.46	0.21	0.06	0.16
	60 Part Class	0.51	0.26	0.05	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	-0.05
	16 Type Sr	0.06	0.00	0.00	0.00
	17 Type Jr	0.10	0.01	0.01	0.00
	34 Tot Roll	0.15	0.02	0.01	-0.09
	48 Lect Disc	0.40	0.16	0.14	0.36
	47 Lecture	0.46	0.21	0.06	0.16
	60 Part Class	0.51	0.26	0.05	-0.20

New England (N ≈ 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.50	0.25	0.25	0.50
	47 Lecture	0.59	0.34	0.09	0.22
	83 SCIP FB TE	0.62	0.39	0.05	-0.25
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	48 Lect Disc	0.50	0.25	0.25	0.50
	47 Lecture	0.59	0.34	0.09	0.22
	83 SCIP FB TE	0.62	0.39	0.05	-0.25
School Type Forced	15 Type J-Sr	0.07	0.00	0.00	0.07
	16 Type Sr	0.19	0.04	0.03	0.09
	17 Type Jr	0.19	0.04	0.00	-0.17
	48 Lect Disc	0.53	0.28	0.24	0.50
	47 Lecture	0.61	0.37	0.09	0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.00	0.00	0.07
	16 Type Sr	0.19	0.04	0.03	0.09
	17 Type Jr	0.19	0.04	0.00	-0.17
	34 Tot Roll	0.19	0.04	0.00	0.05
	48 Lect Disc	0.53	0.28	0.24	0.50
	47 Lecture	0.61	0.37	0.09	0.22

Rocky Mountains (N ≈ 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.40	0.16	0.16	0.40
	47 Lecture	0.47	0.22	0.06	0.21
	03 NDEA EQ	0.51	0.26	0.04	0.23
	05 NDEA REMOD	0.58	0.33	0.07	-0.21
	04 ESEA EQ	0.62	0.39	0.06	-0.03
	69 COOP Staff	0.67	0.45	0.06	0.17
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	48 Lect Disc	0.40	0.16	0.16	0.40
	69 COOP Staff	0.47	0.22	0.06	0.17
	05 NDEA REMOD	0.54	0.29	0.07	-0.21
	31 SCIP Bio Roll	0.60	0.36	0.07	0.21
	03 NDEA EQ	0.63	0.40	0.04	0.23
	04 ESEA EQ	0.68	0.47	0.07	-0.03
School Type Forced	15 Type J-Sr	0.12	0.01	0.01	-0.12
	16 Type Sr	0.16	0.02	0.01	0.13
	17 Type Jr	0.19	0.04	0.01	-0.09
	48 Lect Disc	0.43	0.19	0.15	0.40
	69 COOP Staff	0.52	0.27	0.08	0.17
	05 NDEA REMOD	0.58	0.34	0.07	-0.21
	03 NDEA EQ	0.62	0.38	0.04	0.23
	62 Sci Proj	0.66	0.43	0.05	-0.19
School Type & Total Enroll. Forced	15 Type J-Sr	0.12	0.01	0.01	-0.12
	16 Type Sr	0.16	0.02	0.01	0.13
	17 Type Jr	0.19	0.04	0.01	-0.09
	34 Tot Roll	0.19	0.04	0.00	0.03
	48 Lect Disc	0.43	0.19	0.15	0.40
	69 COOP Staff	0.52	0.27	0.08	0.17
	05 NDEA REMOD	0.58	0.34	0.07	-0.21
	03 NDEA EQ	0.62	0.39	0.05	0.23
	62 Sci Proj	0.66	0.44	0.05	-0.19

TABLE 55 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	12 Roll Goal	0.29	0.09	0.09	-0.29
	[illegible] Lect Disc	0.39	0.15	0.06	0.27
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	-0.09
	12 Roll Goal	0.30	0.09	0.08	-0.29
	48 Lect Disc	0.39	0.15	0.06	0.27
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.20	0.04	0.04	0.14
	17 Type Jr	0.20	0.04	0.00	-0.19
	69 Roll Chan	0.36	0.13	0.09	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.20	0.04	0.04	0.14
	17 Type Jr	0.20	0.04	0.00	-0.19
	34 Tot Roll	0.22	0.05	0.01	-0.09
	69 Roll Chan	0.40	0.16	0.11	-0.24

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.34	0.11	0.11	0.34
	47 Lecture	0.42	0.18	0.06	0.20
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	48 Lect Disc	0.34	0.11	0.11	0.34
	47 Lecture	0.42	0.18	0.06	0.20
School Type Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.16	0.02	0.02	0.16
	17 Type Jr	0.18	0.03	0.01	-0.13
	48 Lect Disc	0.36	0.13	0.10	0.34
	47 Lecture	0.43	0.19	0.06	0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.16	0.02	0.02	0.16
	17 Type Jr	0.18	0.03	0.01	-0.13
	34 Tot Roll	0.18	0.03	0.00	-0.01
	48 Lect Disc	0.36	0.13	0.10	0.34
	47 Lecture	0.43	0.19	0.06	0.20

All Regions Combined (N = 2162)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	48 Lect Disc	0.34	0.12	0.12	0.34
	47 Lecture	0.41	0.17	0.05	0.16
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	48 Lect Disc	0.34	0.12	0.12	0.34
	47 Lecture	0.41	0.17	0.05	0.16
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.12	0.01	0.01	0.11
	17 Type Jr	0.12	0.02	0.00	-0.12
	48 Lect Disc	0.35	0.13	0.11	0.34
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.12	0.01	0.01	0.11
	17 Type Jr	0.12	0.02	0.00	-0.12
	34 Tot Roll	0.12	0.02	0.00	0.02
	48 Lect Disc	0.35	0.13	0.11	0.34

TABLE 56

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF WRITTEN ASSIGNMENTS AS IMPORTANT GRADING METHOD

Great Lakes (N ≈ 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	54 Class Assign	0.26	0.07	0.07	0.26
	60 Part Class	0.34	0.11	0.05	-0.18
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	54 Class Assign	0.26	0.07	0.07	0.26
	60 Part Class	0.34	0.11	0.05	-0.18
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.06	0.00	0.00	0.06
	17 Type Jr	0.07	0.01	0.00	-0.03
	54 Class Assign	0.27	0.07	0.07	0.26
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	[illegible]
	16 Type Sr	0.06	0.00	0.00	0.06
	17 Type Jr	0.07	0.01	0.00	-0.03
	34 Tot Roll	0.07	0.01	0.00	0.03
	54 Class Assign	0.27	0.07	0.07	0.26

Mideast (N ≈ 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	61 Perf Lab	0.34	0.12	0.12	-0.34
	60 Part Class	0.46	0.21	0.09	-0.21
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	-0.06
	61 Perf Lab	0.35	0.12	0.12	-0.34
	60 Part Class	0.46	0.21	0.09	-0.21
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.08	0.01	0.01	-0.08
	17 Type Jr	0.08	0.01	0.00	0.05
	61 Perf Lab	0.35	0.12	0.11	-0.34
	60 Part Class	0.46	0.21	0.09	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.08	0.01	0.01	-0.08
	17 Type Jr	0.08	0.01	0.00	0.05
	34 Tot Roll	0.09	0.01	0.00	-0.06
	61 Perf Lab	0.35	0.12	0.11	-0.34
	60 Part Class	0.46	0.21	0.09	-0.21

Farwest (N ≈ 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	54 Class Assign	0.27	0.07	0.07	0.27
	60 Part Class	0.35	0.12	0.05	-0.21
Total Enroll. Forced	34 Tot Roll	0.13	0.02	0.02	-0.13
	54 Class Assign	0.28	0.08	0.06	0.27
	60 Part Class	0.36	0.13	0.05	-0.21
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.15	0.02	0.02	-0.12
	17 Type Jr	0.17	0.03	0.01	0.17
	54 Class Assign	0.30	0.09	0.06	0.27
	60 Part Class	0.39	0.15	0.06	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.15	0.02	0.02	-0.12
	17 Type Jr	0.17	0.03	0.01	0.17
	34 Tot Roll	0.20	0.04	0.01	-0.13
	54 Class Assign	0.31	0.10	0.06	0.27
	60 Part Class	0.39	0.15	0.06	-0.21

Southwest (N ≈ 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	54 Class Assign	0.35	0.12	0.12	0.35
	60 Part Class	0.47	0.22	0.10	-0.35
	61 Perf Lab	0.55	0.30	0.08	-0.27
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	-0.09
	54 Class Assign	0.36	0.13	0.12	0.35
	60 Part Class	0.48	0.23	0.10	-0.35
	61 Perf Lab	0.55	0.30	0.08	-0.27
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.03	0.00	0.00	0.02
	17 Type Jr	0.05	0.00	0.00	-0.02
	54 Class Assign	0.36	0.13	0.13	0.35
	60 Part Class	0.48	0.23	0.10	-0.35
	61 Perf Lab	0.56	0.31	0.09	-0.27
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.03	0.00	0.00	0.02
	17 Type Jr	0.05	0.00	0.00	-0.02
	34 Tot Roll	0.12	0.01	0.01	-0.09
	54 Class Assign	0.37	0.14	0.12	0.35
	60 Part Class	0.48	0.23	0.10	-0.35
	61 Perf Lab	0.56	0.31	0.08	-0.27

New England (N ≈ 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	60 Part Class	0.36	0.13	0.13	-0.36
	61 Perf Lab	0.54	0.29	0.16	-0.33
Total Enroll. Forced	34 Tot Roll	0.05	0.00	0.00	0.05
	60 Part Class	0.36	0.13	0.12	-0.36
	61 Perf Lab	0.54	0.29	0.16	-0.33
School Type Forced	15 Type J-Sr	0.25	0.06	0.06	0.25
	16 Type Sr	0.25	0.06	0.00	-0.14
	17 Type Jr	0.25	0.06	0.00	-0.06
	60 Part Class	0.45	0.20	0.14	-0.36
	61 Perf Lab	0.56	0.32	0.12	-0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.25	0.06	0.06	0.25
	16 Type Sr	0.25	0.06	0.00	-0.14
	17 Type Jr	0.25	0.06	0.00	-0.06
	34 Tot Roll	0.26	0.07	0.01	0.05
	60 Part Class	0.45	0.20	0.13	-0.36
	61 Perf Lab	0.56	0.38	0.12	-0.33
	11 Roll Earth	0.60	0.36	0.04	-0.15
	54 Class Assign	0.64	0.41	0.05	0.27

Rocky Mountains (N ≈ 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	13 Roll Phys Sci	0.29	0.09	0.09	0.29
	61 Perf Lab	0.43	0.19	0.10	-0.21
	86 Course Earth	0.52	0.27	0.08	-0.29
	73 Satisfaction	0.57	0.33	0.06	-0.27
	69 COOP Staff	0.63	0.40	0.07	0.17
Total Enroll. Forced	34 Tot Roll	0.22	0.05	0.05	-0.22
	13 Roll Phys Sci	0.36	0.13	0.08	0.29
	61 Perf Lab	0.46	0.21	0.08	-0.21
	86 Course Earth	0.54	0.29	0.08	-0.29
	46 Class	0.58	0.34	0.05	0.16
	69 COOP Staff	0.62	0.38	0.04	0.17
	73 Satisfaction	0.65	0.43	0.05	-0.27
School Type Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.25	0.06	0.06	-0.21
	17 Type Jr	0.26	0.07	0.00	0.22
	86 Course Earth	0.44	0.20	0.13	-0.29
	73 Satisfaction	0.52	0.27	0.07	-0.27
	40 NSF INSERV	0.56	0.31	0.05	0.25
	89 NSF	0.60	0.36	0.04	-0.16
	66 Sci Fac	0.64	0.41	0.05	0.26
School Type & Total Enroll. Forced	15 Type J-Sr	0.07	0.01	0.01	-0.07
	16 Type Sr	0.25	0.06	0.06	-0.21
	17 Type Jr	0.26	0.07	0.00	0.22
	34 Tot Roll	0.31	0.10	0.03	-0.22
	86 Course Earth	0.47	0.22	0.12	-0.29
	73 Satisfaction	0.53	0.28	0.06	-0.27
	69 COOP Staff	0.57	0.32	0.05	0.17
	61 Perf Lab	0.61	0.38	0.05	-0.21
	13 Roll Phys Sci	0.66	0.44	0.06	0.29

TABLE 56 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	60 Part Class	0.33	0.11	0.11	-0.33
	54 Class Assign	0.44	0.19	0.09	0.29
	61 Perf Lab	0.49	0.24	0.05	-0.18
Total Enroll. Forced	34 Tot Enrl	0.02	0.00	0.00	0.02
	60 Part Class	0.33	0.11	0.11	-0.33
	54 Class Assign	0.44	0.19	0.09	0.29
	30 Enrl Physics	0.50	0.25	0.06	-0.16
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.06	0.00	0.00	-0.02
	17 Type Jr	0.09	0.01	0.00	-0.05
	60 Part Class	0.33	0.11	0.10	-0.33
	54 Class Assign	0.45	0.20	0.09	0.29
	61 Perf Lab	0.51	0.26	0.05	-0.18
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	0.06
	16 Type Sr	0.06	0.00	0.00	-0.02
	17 Type Jr	0.09	0.01	0.00	-0.05
	34 Tot Enrl	0.10	0.01	0.00	0.02
	60 Part Class	0.34	0.11	0.10	-0.33
	30 Enrl Physics	0.46	0.21	0.09	-0.16

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	54 Class Assign	0.36	0.13	0.13	0.36
	60 Part Class	0.41	0.17	0.04	-0.23
	61 Perf Lab	0.48	0.23	0.06	-0.25
Total Enroll. Forced	34 Tot Enrl	0.03	0.00	0.00	-0.03
	54 Class Assign	0.36	0.13	0.13	0.36
	60 Part Class	0.41	0.17	0.05	-0.23
	61 Perf Lab	0.48	0.23	0.06	-0.25
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.16	0.02	0.02	-0.13
	17 Type Jr	0.20	0.04	0.01	0.19
	54 Class Assign	0.38	0.15	0.11	0.36
	60 Part Class	0.44	0.19	0.05	-0.23
	61 Perf Lab	0.51	0.26	0.06	-0.25
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.16	0.02	0.02	-0.13
	17 Type Jr	0.20	0.04	0.01	0.19
	34 Tot Enrl	0.20	0.04	0.00	-0.03
	54 Class Assign	0.38	0.15	0.11	0.36
	60 Part Class	0.44	0.19	0.05	-0.23
	61 Perf Lab	0.51	0.26	0.07	-0.25

All Regions Combined (N = 2162)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	54 Class Assign	0.30	0.09	0.09	0.30
	60 Part Class	0.39	0.15	0.06	-0.26
	61 Perf Lab	0.47	0.22	0.07	-0.24
Total Enroll. Forced	34 Tot Enrl	0.04	0.00	0.00	-0.04
	54 Class Assign	0.30	0.09	0.09	0.30
	60 Part Class	0.39	0.15	0.06	-0.26
	61 Perf Lab	0.47	0.22	0.07	-0.24
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.06	0.00	0.00	-0.05
	17 Type Jr	0.07	0.00	0.00	0.07
	54 Class Assign	0.30	0.09	0.08	0.30
	60 Part Class	0.39	0.15	0.07	-0.26
	61 Perf Lab	0.47	0.22	0.07	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.06	0.00	0.00	-0.05
	17 Type Jr	0.07	0.00	0.00	0.07
	34 Tot Enrl	0.08	0.01	0.00	-0.04
	54 Class Assign	0.30	0.09	0.08	0.30
	60 Part Class	0.39	0.16	0.07	-0.26
	61 Perf Lab	0.47	0.22	0.07	-0.24

TABLE 57

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF STUDENT PARTICIPATION IN CLASS AS IMPORTANT GRADING METHOD

Great Lakes (N ≈ 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	——	——	——	——
Total Enroll. Forced	34 Tot Roll	0.04	0.00	0.00	0.04
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.07	0.00	0.00	-0.05
	17 Type Jr	0.09	0.01	0.00	0.04
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.07	0.00	0.00	-0.05
	17 Type Jr	0.09	0.01	0.00	0.04
	34 Tot Roll	0.11	0.01	0.00	0.04

Mideast (N ≈ 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	49 Sci Demo	0.24	0.06	0.06	0.24
Total Enroll. Forced	34 Tot Roll	0.03	0.00	0.00	0.03
	61 Perf Lab	0.25	0.06	0.06	-0.24
	59 Writ Assign	0.39	0.15	0.09	-0.21
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.09	0.01	0.01	-0.09
	17 Type Jr	0.09	0.01	0.00	0.07
	49 Sci Demo	0.26	0.07	0.06	0.24
	59 Writ Assign	0.33	0.11	0.04	-0.21
	61 Perf Lab	0.44	0.19	0.08	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	0.04
	16 Type Sr	0.09	0.01	0.01	-0.09
	17 Type Jr	0.09	0.01	0.00	0.07
	34 Tot Roll	0.11	0.01	0.00	0.03
	61 Perf Lab	0.26	0.07	0.05	-0.24
	59 Writ Assign	0.40	0.16	0.10	-0.21

Farwest (N ≈ 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	63 Interest	0.27	0.07	0.07	0.27
	59 Writ Assign	0.36	0.13	0.06	-0.21
	61 Perf Lab	0.44	0.19	0.06	-0.23
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	63 Interest	0.27	0.07	0.07	0.27
	59 Writ Assign	0.36	0.13	0.06	-0.21
	61 Perf Lab	0.44	0.19	0.06	-0.23
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.09	0.01	0.01	-0.08
	17 Type Jr	0.14	0.02	0.01	0.12
	63 Interest	0.30	0.09	0.07	0.27
	59 Writ Assign	0.40	0.16	0.07	-0.21
	61 Perf Lab	0.46	0.21	0.06	-0.23
School Type & Total Enroll Forced	15 Type J-Sr	0.01	0.00	0.00	0.01
	16 Type Sr	0.09	0.01	0.01	-0.08
	17 Type Jr	0.14	0.02	0.01	0.12
	34 Tot Roll	0.15	0.02	0.00	0.02
	63 Interest	0.30	0.09	0.07	0.27
	59 Writ Assign	0.40	0.16	0.07	-0.21
	61 Perf Lab	0.46	0.21	0.06	-0.23

Southwest (N ≈ 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.35	0.12	0.12	-0.35
	36 Age	0.42	0.18	0.06	0.29
	61 Perf Lab	0.48	0.23	0.05	-0.12
	58 G Test	0.53	0.28	0.05	-0.21
Total Enroll. Forced	34 Tot Roll	0.07	0.00	0.00	0.07
	59 Writ Assign	0.35	0.12	0.12	-0.35
	61 Perf Lab	0.43	0.18	0.06	-0.12
	58 G Test	0.49	0.24	0.06	-0.20
	36 Age	0.53	0.28	0.05	0.29
School Type Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.04
	17 Type Jr	0.09	0.01	0.00	0.08
	59 Writ Assign	0.36	0.13	0.12	-0.35
	36 Age	0.44	0.19	0.06	0.29
	61 Perf Lab	0.50	0.25	0.06	-0.12
	58 G Test	0.55	0.30	0.05	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.09	0.01	0.01	-0.09
	16 Type Sr	0.09	0.01	0.00	0.04
	17 Type Jr	0.09	0.01	0.00	0.02
	34 Tot Roll	0.10	0.01	0.00	0.07
	59 Writ Assign	0.36	0.13	0.12	-0.35
	36 Age	0.44	0.19	0.06	0.29
	61 Perf Lab	0.50	0.25	0.06	-0.12
	58 G Test	0.55	0.30	0.05	-0.20

New England (N ≈ 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.36	0.13	0.13	-0.36
	61 Perf Lab	0.48	0.23	0.10	-0.18
	74 Hrs Bio	0.53	0.28	0.06	0.31
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	-0.09
	59 Writ Assign	0.36	0.13	0.12	-0.36
	61 Perf Lab	0.48	0.23	0.10	-0.18
	74 Hrs Bio	0.54	0.29	0.06	0.31
School Type Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.06	0.00	0.00	-0.01
	17 Type Jr	0.06	0.00	0.00	-0.02
	59 Writ Assign	0.39	0.15	0.14	-0.36
	61 Perf Lab	0.49	0.24	0.09	-0.18
	74 Hrs Bio	0.55	0.30	0.06	0.31
School Type & Total Enroll. Forced	15 Type J-Sr	0.05	0.00	0.00	0.05
	16 Type Sr	0.06	0.00	0.00	-0.01
	17 Type Jr	0.06	0.00	0.00	-0.02
	34 Tot Roll	0.11	0.01	0.01	-0.09
	59 Writ Assign	0.39	0.15	0.14	-0.36
	61 Perf Lab	0.49	0.24	0.09	-0.18
	74 Hrs Bio	0.55	0.30	0.06	0.31

Rocky Mountains (N ≈ 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	20 Sci Fair	0.29	0.09	0.09	-0.29
	74 Hrs Bio	0.38	0.14	0.05	-0.16
	70 Small Classes	0.44	0.20	0.05	0.19
	29 SCIP PS Roll	0.50	0.25	0.05	-0.19
	71 Preps	0.55	0.31	0.06	-0.18
	37 Sex	0.60	0.36	0.05	-0.27
Total Enroll. Forced	34 Tot Roll	0.15	0.02	0.02	-0.15
	37 Sex	0.30	0.09	0.07	-0.27
	53 Group Lab	0.40	0.16	0.07	-0.26
	70 Small Classes	0.47	0.23	0.06	0.19
	58 G Test	0.52	0.27	0.05	-0.15
	29 SCIP PS Roll	0.56	0.31	0.04	-0.19
	71 Preps	0.60	0.36	0.05	-0.18
School Type Forced	15 Type J-Sr	0.20	0.04	0.04	0.20
	16 Type Sr	0.27	0.07	0.03	-0.23
	17 Type Jr	0.27	0.07	0.00	0.09
	53 Group Lab	0.37	0.14	0.07	-0.26
	37 Sex	0.46	0.21	0.07	-0.27
	54 Class Assign	0.52	0.27	0.06	-0.12
	29 SCIP PS Roll	0.56	0.32	0.05	-0.19
	88 Course Phy Sci	0.61	0.38	0.06	0.19
School Type & Total Enroll. Forced	15 Type J-Sr	0.20	0.04	0.04	0.20
	16 Type Sr	0.27	0.07	0.03	-0.23
	17 Type Jr	0.27	0.07	0.00	0.09
	34 Tot Roll	0.27	0.07	0.00	-0.15
	53 Group Lab	0.37	0.14	0.07	-0.26
	37 Sex	0.46	0.21	0.07	-0.27
	54 Class Assign	0.52	0.27	0.06	-0.12
	29 SCIP PS Roll	0.56	0.32	0.05	-0.19
	88 Course Phy Sci	0.62	0.38	0.06	0.19

TABLE 57 Continued

Plains (N ≈ 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.33	0.11	0.11	-0.33
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	59 Writ Assign	0.33	0.11	0.11	-0.33
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.04	0.00	0.00	0.04
	17 Type Jr	0.09	0.01	0.01	-0.00
	59 Writ Assign	0.33	0.11	0.10	-0.33
	61 Perf Lab	0.40	0.16	0.05	-0.15
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.04	0.00	0.00	0.04
	17 Type Jr	0.09	0.01	0.01	-0.00
	34 Tot Roll	0.09	0.01	0.00	0.02
	59 Writ Assign	0.33	0.11	0.10	-0.33
	61 Perf Lab	0.40	0.16	0.05	-0.15

Southeast (N ≈ 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.23	0.05	0.05	-0.23
	61 Perf Lab	0.37	0.14	0.08	-0.22
	68 Inservice	0.43	0.18	0.05	0.18
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	-0.09
	59 Writ Assign	0.25	0.06	0.06	-0.23
	61 Perf Lab	0.38	0.14	0.08	-0.28
School Type Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.12	0.01	0.01	-0.09
	17 Type Jr	0.17	0.03	0.02	0.08
	59 Writ Assign	0.30	0.09	0.06	-0.23
	61 Perf Lab	0.40	0.16	0.08	-0.22
	68 Inservice	0.46	0.21	0.05	0.18
School Type & Total Enroll. Forced	15 Type J-Sr	0.02	0.00	0.00	-0.02
	16 Type Sr	0.12	0.01	0.01	-0.09
	17 Type Jr	0.17	0.03	0.02	0.02
	34 Tot Roll	0.18	0.03	0.00	-0.09
	59 Writ Assign	0.30	0.09	0.06	-0.23
	61 Perf Lab	0.40	0.16	0.07	-0.22

All Regions Combined (N ≈ 2162)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.26	0.07	0.07	-0.26
	61 Perf Lab	0.36	0.13	0.06	-0.18
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	-0.01
	59 Writ Assign	0.26	0.07	0.07	-0.26
	61 Perf Lab	0.36	0.13	0.06	-0.18
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.08	0.01	0.01	-0.08
	17 Type Jr	0.09	0.01	0.00	0.05
	59 Writ Assign	0.28	0.08	0.07	-0.26
	61 Perf Lab	0.37	0.13	0.06	-0.18
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.08	0.01	0.01	-0.08
	17 Type Jr	0.09	0.01	0.00	0.05
	34 Tot Roll	0.09	0.01	0.00	-0.01
	59 Writ Assign	0.28	0.08	0.07	-0.26
	61 Perf Lab	0.37	0.13	0.04	-0.18

TABLE 58

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER RANKING OF STUDENT PERFORMANCE IN LABORATORY AS IMPORTANT GRADING METHOD

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.47	0.22	0.12	0.20
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	0.01
	52 Ind Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.47	0.23	0.12	0.20
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.07	0.00	0.00	0.05
	17 Type Jr	0.07	0.00	0.00	-0.02
	52 Ind Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.48	0.23	0.12	0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.07	0.00	0.00	0.05
	17 Type Jr	0.07	0.00	0.00	-0.02
	34 Tot Roll	0.07	0.00	0.00	0.01
	52 Ind Lab	0.33	0.11	0.10	0.32
	53 Group Lab	0.48	0.23	0.12	0.20

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	53 Group Lab	0.36	0.13	0.13	0.36
	52 Ind Lab	0.55	0.30	0.17	0.34
	59 Writ Assign	0.61	0.37	0.07	-0.34
	60 Part Class	0.65	0.42	0.05	-0.24
Total Enroll. Forced	34 Tot Roll	0.01	0.00	0.00	0.01
	53 Group Lab	0.36	0.13	0.13	0.36
	52 Ind Lab	0.55	0.30	0.18	0.34
	59 Writ Assign	0.61	0.37	0.07	-0.34
	60 Part Class	0.65	0.42	0.05	-0.24
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.13	0.02	0.01	0.13
	17 Type Jr	0.13	0.02	0.00	-0.08
	53 Group Lab	0.40	0.16	0.14	0.36
	52 Ind Lab	0.57	0.32	0.17	0.34
	59 Writ Assign	0.62	0.39	0.06	-0.34
	60 Part Class	0.66	0.43	0.05	-0.24
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.13	0.02	0.01	0.13
	17 Type Jr	0.13	0.02	0.00	-0.08
	34 Tot Roll	0.14	0.02	0.00	0.01
	53 Group Lab	0.40	0.16	0.14	0.36
	52 Ind Lab	0.57	0.33	0.17	0.34
	59 Writ Assign	0.62	0.39	0.06	-0.34
	60 Part Class	0.66	0.43	0.05	-0.24

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.32	0.10	0.10	0.32
	53 Group Lab	0.53	0.29	0.18	0.32
Total Enroll. Forced	34 Tot Roll	0.09	0.01	0.01	0.09
	52 Ind Lab	0.33	0.11	0.10	[illegible]
	53 Group Lab	0.54	0.29	0.18	0.32
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.17	0.03	0.03	0.17
	17 Type Jr	0.17	0.03	0.00	-0.15
	53 Group Lab	0.35	0.12	0.10	0.32
	52 Ind Lab	0.55	0.30	0.17	0.32
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.17	0.03	0.03	0.17
	17 Type Jr	0.17	0.03	0.00	-0.15
	34 Tot Roll	0.17	0.03	0.00	0.09
	53 Group Lab	0.35	0.12	0.09	0.32
	52 Ind Lab	0.55	0.30	0.17	0.32

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.31	0.09	0.09	0.31
	53 Group Lab	0.51	0.26	0.16	0.30
Total Enroll. Forced	34 Tot Roll	0.24	0.06	0.06	0.24
	52 Ind Lab	0.39	0.15	0.09	0.31
	53 Group Lab	0.53	0.28	0.13	0.30
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.06	0.00	0.00	0.05
	17 Type Jr	0.14	0.02	0.01	-0.02
	52 Ind Lab	0.33	0.11	0.09	0.31
	53 Group Lab	0.51	0.26	0.16	0.30
	15 Type J-Sr	0.00	0.00	0.00	-0.00
	16 Type Sr	0.06	0.00	0.00	0.05
	17 Type Jr	0.14	0.02	0.01	-0.02
	34 Tot Roll	0.28	0.08	0.06	0.24
	52 Ind Lab	0.41	0.16	0.09	0.31
	53 Group Lab	0.54	0.29	0.12	0.30

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.33	0.11	0.11	-0.33
	60 Part Class	0.46	0.21	0.10	-0.18
	52 Ind Lab	0.56	0.31	0.10	0.33
	53 Group Lab	0.66	0.43	0.12	0.29
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	59 Writ Assign	0.33	0.11	0.11	-0.33
	60 Part Class	0.46	0.21	0.10	-0.18
	52 Ind Lab	0.56	0.31	0.10	0.33
	53 Group Lab	0.66	0.44	0.12	0.29
	46 Class #	0.70	0.49	0.05	-0.25
School Type Forced	15 Type J-Sr	0.27	0.07	0.07	-0.27
	16 Type Sr	0.27	0.07	0.00	0.18
	17 Type Jr	0.28	0.08	0.01	0.05
	52 Ind Lab	0.43	0.19	0.11	0.33
	53 Group Lab	0.55	0.31	0.12	0.29
	46 Class #	0.61	0.37	0.07	-0.25
	59 Writ Assign	0.65	0.42	0.05	-0.33
	60 Part Class	0.71	0.50	0.08	-0.18
School Type & Total Enroll Forced	15 Type J-Sr	0.27	0.07	0.07	-0.27
	16 Type Sr	0.27	0.07	0.00	0.18
	17 Type Jr	0.28	0.08	0.01	0.05
	34 Tot Roll	0.28	0.08	0.00	0.02
	52 Ind Lab	0.43	0.19	0.11	0.33
	53 Group Lab	0.56	0.31	0.12	0.29
	46 Class #	0.62	0.38	0.07	-0.25
	59 Writ Assign	0.66	0.44	0.05	-0.33
	60 Part Class	0.72	0.51	0.08	-0.18

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.50	0.25	0.25	0.50
	53 Group Lab	0.65	0.42	0.18	0.36
	19 Sci Club	0.69	0.47	0.05	0.30
	49 Sci Demo	0.72	0.51	0.04	-0.37
	84 Course Bio	0.75	0.56	0.05	-0.03
Total Enroll. Forced	34 Tot Roll	0.18	0.03	0.03	0.18
	52 Ind Lab	0.51	0.26	0.22	0.50
	53 Group Lab	0.65	0.43	0.17	0.36
	19 Sci Club	0.69	0.48	0.05	0.30
	49 Sci Demo	0.72	0.51	0.04	-0.37
	84 Course Bio	0.75	0.56	0.05	-0.03
School Type Forced	15 Type J-Sr	0.20	0.04	0.04	-0.20
	16 Type Sr	0.23	0.05	0.02	0.18
	17 Type Jr	0.27	0.07	0.02	-0.00
	52 Ind Lab	0.53	0.28	0.21	0.50
	53 Group Lab	0.68	0.46	0.18	0.36
School Type & Total Enroll. Forced	15 Type J-Sr	0.20	0.04	0.04	-0.20
	16 Type Sr	0.23	0.05	0.02	0.18
	17 Type Jr	0.27	0.07	0.02	-0.00
	34 Tot Roll	0.28	0.08	0.01	0.18
	52 Ind Lab	0.53	0.29	0.21	0.50
	53 Group Lab	0.68	0.46	0.18	0.36

TABLE 58 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	83 SCIP PS TE	0.24	0.06	0.06	0.24
	16 Type Sr	0.37	0.13	0.07	0.20
	53 Group Lab	0.42	0.18	0.05	0.22
	52 Ind Lab	0.51	0.26	0.08	0.23
	30 SCIP ES Roll	0.56	0.31	0.05	-0.11
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	0.06
	83 SCIP PS TE	0.25	0.06	0.06	0.24
	11 Roll Earth	0.38	0.14	0.08	-0.22
	53 Group Lab	0.43	0.18	0.04	0.22
	52 Ind Lab	0.51	0.26	0.08	0.23
	30 SCIP ES Roll	0.55	0.31	0.05	-0.11
School Type Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.20	0.04	0.03	0.20
	17 Type Jr	0.24	0.06	0.01	-0.14
	83 SCIP PS TE	0.40	0.16	0.10	0.24
	53 Group Lab	0.44	0.20	0.04	0.22
	52 Ind Lab	0.52	0.27	0.08	0.23
	30 SCIP Roll	0.57	0.32	0.05	-0.11
School Type & Total Enroll. Forced	15 Type J-Sr	0.11	0.01	0.01	-0.11
	16 Type Sr	0.20	0.04	0.03	0.20
	17 Type Jr	0.24	0.06	0.01	-0.14
	34 Tot Roll	0.24	0.06	0.00	0.06
	83 SCIP PS TE	0.40	0.16	0.10	0.24
	53 Group Lab	0.45	0.20	0.04	0.22
	52 Ind Lab	0.53	0.28	0.08	0.23

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	53 Group Lab	0.50	0.25	0.25	0.50
	52 Ind Lab	0.64	0.41	0.17	0.40
Total Enroll. Forced	34 Tot Roll	0.16	0.03	0.03	0.16
	53 Group Lab	0.51	0.26	0.23	0.50
	52 Ind Lab	0.64	0.41	0.16	0.40
School Type Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.08	0.01	0.00	0.08
	17 Type Jr	0.14	0.02	0.01	0.03
	53 Group Lab	0.51	0.26	0.24	0.50
	52 Ind Lab	0.65	0.42	0.16	0.40
School Type & Total Enroll. Forced	15 Type J-Sr	0.04	0.00	0.00	-0.04
	16 Type Sr	0.08	0.01	0.00	0.08
	17 Type Jr	0.14	0.02	0.01	0.03
	34 Tot Roll	0.20	0.04	0.02	0.16
	53 Group Lab	0.51	0.26	0.22	0.50
	52 Ind Lab	0.65	0.42	0.16	0.40

All Regions Combined (N = 2162)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.34	0.12	0.12	0.34
	53 Group Lab	0.55	0.30	0.18	0.33
Total Enroll. Forced	34 Tot Roll	0.10	0.01	0.01	0.10
	52 Ind Lab	0.35	0.12	0.11	0.34
	53 Group Lab	0.55	0.30	0.18	0.33
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.16	0.02	0.02	0.16
	17 Type Jr	0.17	0.03	0.00	-0.07
	52 Ind Lab	0.37	0.14	0.11	0.34
	53 Group Lab	0.56	0.31	0.18	0.33
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.16	0.02	0.02	0.16
	17 Type Jr	0.17	0.03	0.00	-0.07
	34 Tot Roll	0.17	0.03	0.00	0.10
	52 Ind Lab	0.37	0.14	0.11	0.34
	53 Group Lab	0.56	0.31	0.18	0.33

Teacher Ranking of Test Scores as Important Grading Method had positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Lecture-Discussion as Important Learning Activity

and negative correlation ($\alpha \leq 0.001$) with

-Teaching Experience Using Physical Science SCIP Materials

-Use of a Tape Recorder

-Rank of Small Group Discussion as a Learning Activity

The teachers which tend to value test scores as a grading criterion tend to favor lecture-discussion. Those teachers who favor other than test scores for grading tend to be involved with more innovative teaching materials and methods such as SCIP materials, use of tape recorders or small group discussion learning activities.

The best predictors of Teacher Ranking of Test Scores as Important Grading Method were the teacher rankings for lecture and for lecture-discussion as important learning activities. Those teachers preferring lecture, lecture-discussion or a combination of these activities tend to favor the use of test scores for grading. The removal of the influence of school size and type had no apparent effect on these relationships. See Table 55, p84.

Written Assignments

The means for Teacher Ranking of Written Assignments as Important Grading Method ranged from a low of 1.30 in the New England region to a high of 2.25 in the Rocky Mountains region. These rankings are the reverse of what was observed for test scores. This would be due, in part, to the dependence between the grading method variables because of the ranking process. These values represent a range from "used" to "3rd most used." See Table 52, p82.

Teacher Ranking of Written Assignments as Important Grading Method had a positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Written Assignments as Important Learning Activity

This relationship reflects a consistency in the rankings of the learning activities and the grading methods. No negative correlates other than those among the grading method rankings were obtained.

The best predictors of Teacher Ranking of Written Assignments as Important Grading Method were the rankings of written assignments for learning activities. The rankings of participation in class discussion and performance in laboratory also made significant contributions to the prediction of the rank of written assignments for grading purpose. The weights for these variables were negative and due, primarily, to the dependence in the variables due to the ranking process. The removal of the influence of school size and type had no apparent effects on these relationships. See Table 56, p86.

Student Participation in Class Discussion

The means for Teacher Ranking of Student Participation in Class Discussion as Important Grading Method vary from a low of about 0.85 for the Rocky Mountains region to a high of about 1.45 in the Mideast and Southeast regions. These responses generally represent the "used" category but not ranked in the top three grading methods for importance. See Table 53, p83.

Teacher Ranking of Student Participation in Class as Important Grading Method had a positive correlation ($\alpha \leq 0.001$) with

+Teacher Ranking of Science Demonstrations as Important Learning Activity.

No negative correlates outside the grading method rankings were obtained.

The best predictors of Teacher Ranking of Student Participation in Class as Important Grading Method were the other grading method rankings. No effects were apparent when school size and type were removed. See Table 57, p88.

Student Performance in Laboratory Activity

The means for Teacher Ranking of Student Performance in Laboratory Activity as Important Grading Method ranged from a low of 1.79 in the Southeast region to a high of about 2.50 in the Farwest and New England regions. This results in a ranking of "3rd most used" to "2nd most used" as a grading criterion. See Table 54, p83.

Teacher Ranking of Student Performance in Laboratory Activity as Important Grading Method had positive correlation ($\alpha \leq 0.001$) with

+Use of SCIP Materials

+Teacher Ranking of Individual and Group Laboratory Activities as Important Learning Activity

+Teaching Experience with SCIP Physical Science Materials

and negative correlation ($\alpha \leq 0.001$) with

-Teacher Ranking of Lecture-Discussion as Important Learning Activity

The ranking of laboratory performance for grading purpose tended to be higher for those teachers using SCIP materials especially in physical science courses. Teachers were consistent in their learning activity rankings and the grading criteria rankings. Those teachers favoring group or individual laboratory activities also favored laboratory performance as a grading criteria. The negative relationship indicates that those teachers who valued student laboratory performance for grading did not consider lecture-discussion as high in importance as those who valued laboratory performance less for grading purposes.

The best predictors of Teacher Ranking of Student Performance in Laboratory as Important Grading Method were the teacher rankings for group and individual laboratory learning activities. In all regions the teachers who favored laboratory learning activities also favored student performance in laboratory or a grading criterion. The removal of the influence of school size and school type produced some change in the weights of the predictors but no consistent pattern of change was noted from region to region. See Table 58, p90.

Teacher Satisfaction with Science Teaching as a Career

The teachers were asked to indicate on a scale from "very satisfied" to "very dissatisfied" how they felt about teaching science as a career. The means for these responses are given in Table 59. The means ranged from "satisfied" to "very satisfied." The mean was 4.47 over all regions. Less than 3 percent of the respondents expressed any degree of dissatisfaction.

TABLE 59

MEANS[a] AND STANDARD DEVIATIONS FOR TEACHER SATISFACTION WITH SCIENCE TEACHING AS A CAREER

	Great Lakes	Farwest	New England	Mideast	Southwest	Rocky Mountains	Plains	Southeast	Total U.S.
Mean	4.55	4.53	4.45	4.52	4.46	4.36	4.32	4.37	4.47
S.D.	0.67	0.62	0.73	0.69	0.68	0.76	0.74	0.75	0.70
N	457	311	129	433	179	83	223	360	2175

[a] very satisfied = 5 to very dissatisfied = 1

The satisfaction with science teaching variable correlated positively ($\alpha \leq 0.001$) in at least four of the eight regions with the following variables

+Age of Teacher

+School Type Junior-Senior High

+School Type Junior High

+Teacher Ranking of Individual Laboratory as Important Learning Activity

There were no negative correlates.

The stepwise multiple regression analyses showed no predictors which were consistent from region to region. These results are given in Table 60. In

TABLE 60

SUMMARY OF STEPWISE REGRESSION ANALYSES FOR PREDICTION OF TEACHER SATISFACTION WITH SCIENCE TEACHING AS A CAREER

Great Lakes (N = 459)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	42 Taught Sci	0.25	0.06	0.06	0.25
	64 Innovation	0.33	0.11	0.05	0.19
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
	42 Taught Sci	0.27	0.07	0.06	0.25
	64 Innovation	0.34	0.12	0.05	0.19
School Type Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.14	0.02	0.01	0.13
	17 Type Jr	0.17	0.03	0.01	-0.03
	42 Taught Sci	0.29	0.09	0.06	0.25
	64 Innovation	0.36	0.13	0.05	0.19
School Type & Total Enroll. Forced	15 Type J-Sr	0.10	0.01	0.01	-0.10
	16 Type Sr	0.14	0.02	0.01	0.13
	17 Type Jr	0.17	0.03	0.01	-0.03
	34 Tot Roll	0.19	0.03	0.00	0.11
	42 Taught Sci	0.30	0.09	0.05	0.25
	64 Innovation	0.37	0.14	0.05	0.19

Mideast (N = 433)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Roll	0.04	0.00	0.00	-0.04
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.01	0.00	0.00	0.01
	17 Type Jr	0.04	0.00	0.00	-0.02
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.01	0.00	0.00	0.01
	17 Type Jr	0.04	0.00	0.00	-0.02
	34 Tot Roll	0.04	0.00	0.00	-0.04

Farwest (N = 309)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Roll	0.11	0.01	0.01	0.11
School Type Forced	15 Type J-Sr	0.16	0.03	0.03	-0.16
	16 Type Sr	0.23	0.05	0.03	0.21
	17 Type Jr	0.24	0.06	0.00	-0.17
School Type & Total Enroll. Forced	15 Type J-Sr	0.16	0.03	0.03	-0.16
	16 Type Sr	0.23	0.05	0.03	0.21
	17 Type Jr	0.24	0.06	0.00	-0.17
	34 Tot Roll	0.25	0.06	0.00	0.11

Southwest (N = 182)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	59 Writ Assign	0.22	0.05	0.05	-0.22
Total Enroll. Forced	34 Tot Roll	0.07	0.00	0.00	0.07
	59 Writ Assign	0.23	0.05	0.05	-0.22
School Type Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.08	0.01	0.00	-0.02
	17 Type Jr	0.08	0.01	0.00	-0.02
	59 Writ Assign	0.24	0.06	0.05	-0.22
School Type & Total Enroll. Forced	15 Type J-Sr	0.08	0.01	0.01	0.08
	16 Type Sr	0.08	0.01	0.00	-0.02
	17 Type Jr	0.08	0.01	0.00	-0.02
	34 Tot Roll	0.13	0.02	0.01	0.07
	59 Writ Assign	0.25	0.06	0.05	-0.22

New England (N = 130)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	69 Coop Staff	0.29	0.08	0.08	0.29
	29 SCIP PS Roll	0.37	0.13	0.05	0.18
	88 Course Phy Sci	0.43	0.19	0.05	-0.14
	38 Degree Held	0.48	0.23	0.05	0.18
Total Enroll. Forced	34 Tot Roll	0.00	0.00	0.00	0.00
	69 Coop Staff	0.29	0.08	0.08	0.29
	29 SCIP PS Roll	0.37	0.13	0.05	0.18
	88 Course Phy Sci	0.43	0.19	0.06	-0.14
	38 Degree Held	0.49	0.24	0.05	0.18
School Type Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.07	0.00	0.00	-0.01
	69 Coop Staff	0.30	0.09	0.08	0.29
	39 Pursuing	0.37	0.14	0.05	-0.16
	29 SCIP PS Roll	0.43	0.18	0.04	0.18
	88 Course Phy Sci	0.48	0.23	0.05	-0.14
School Type & Total Enroll. Forced	15 Type J-Sr	0.01	0.00	0.00	-0.01
	16 Type Sr	0.02	0.00	0.00	-0.01
	17 Type Jr	0.07	0.00	0.00	-0.01
	34 Tot Roll	0.07	0.00	0.00	-0.00
	69 Coop Staff	0.30	0.09	0.08	0.29
	39 Pursuing	0.37	0.14	0.05	-0.16
	29 SCIP PS Roll	0.43	0.18	0.04	0.18
	88 Course Phy Sci	0.49	0.24	0.05	-0.14

Rocky Mountains (N = 85)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	52 Ind Lab	0.36	0.13	0.13	0.36
	53 Group Lab	0.44	0.20	0.07	0.22
	48 Lect Disc	0.52	0.27	0.07	0.03
	46 Class #	0.56	0.31	0.05	-0.20
Total Enroll. Forced	34 Tot Roll	0.20	0.04	0.04	0.20
	52 Ind Lab	0.38	0.15	0.11	0.36
	46 Class #	0.46	0.21	0.06	-0.20
	77 Hrs Math	0.53	0.28	0.08	-0.22
School Type Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.19	0.04	0.04	0.17
	17 Type Jr	0.31	0.09	0.06	-0.09
	52 Ind Lab	0.43	0.19	0.09	0.36
	53 Group Lab	0.50	0.25	0.06	0.22
	48 Lect Disc	0.57	0.33	0.08	0.03
	46 Class #	0.62	0.38	0.05	-0.20
School Type & Total Enroll. Forced	15 Type J-Sr	0.03	0.00	0.00	0.03
	16 Type Sr	0.19	0.04	0.04	0.17
	17 Type Jr	0.31	0.09	0.06	-0.09
	34 Tot Roll	0.33	0.11	0.02	0.20
	52 Ind Lab	0.44	0.20	0.09	0.36
	53 Group Lab	0.50	0.25	0.05	0.22
	48 Lect Disc	0.57	0.33	0.08	0.03
	46 Class #	0.63	0.40	0.07	-0.20

TABLE 60 Continued

Plains (N = 225)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	50 Films	0.21	0.05	0.05	-0.21
Total Enroll. Forced	34 Tot Roll	0.06	0.00	0.00	-0.06
	75 Hrs Phy Sci	0.23	0.05	0.05	0.20
School Type Forced	15 Type J-Sr	0.16	0.03	0.03	-0.16
	16 Type Sr	0.16	0.03	0.00	0.08
	17 Type Jr	0.16	0.03	0.00	0.05
	50 Films	0.27	0.07	0.05	-0.21
School Type & Total Enroll. Forced	15 Type J-Sr	0.16	0.03	0.03	-0.16
	16 Type Sr	0.16	0.03	0.00	0.08
	17 Type Jr	0.16	0.03	0.00	0.05
	34 Tot Roll	0.20	0.04	0.01	-0.06
	50 Films	0.29	0.08	0.05	-0.21

Southeast (N = 363)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	36 Age	0.23	0.05	0.05	0.23
Total Enroll. Forced	34 Tot Roll	0.02	0.00	0.00	0.02
	36 Age	0.23	0.05	0.05	0.23
School Type Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.00	0.00	0.00	0.00
	17 Type Jr	0.01	0.00	0.00	0.01
	36 Age	0.23	0.05	0.05	0.23
School Type & Total Enroll. Forced	15 Type J-Sr	0.00	0.00	0.00	0.00
	16 Type Sr	0.00	0.00	0.00	0.00
	17 Type Jr	0.01	0.00	0.00	0.01
	34 Tot Roll	0.02	0.00	0.00	0.02
	36 Age	0.23	0.05	0.05	0.23

All Regions Combined (N ≈ 2175)

	Variable No. and Abbrev.	Multiple R	R Square	RSQ Change	Simple R
All Variables Free	None	----	----	----	----
Total Enroll. Forced	34 Tot Roll	0.07	0.00	0.00	0.07
School Type Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.09	0.01	0.00	0.09
	17 Type Jr	0.09	0.01	0.00	-0.04
School Type & Total Enroll. Forced	15 Type J-Sr	0.06	0.00	0.00	-0.06
	16 Type Sr	0.09	0.01	0.00	0.09
	17 Type Jr	0.09	0.01	0.00	-0.04
	34 Tot Roll	0.10	0.01	0.00	0.07

the Great Lakes region the teachers years of experience at the secondary level and their ranking of innovative programs as important for high quality science programs were the best predictors of satisfaction. In the Farwest region, School Type was the only predictor. Teachers at the high school level tended to be more satisfied. In the New England region the best predictor of satisfaction was the teachers ranking of cooperative staff as important factor for high quality science programs. In the Mideast region there were no significant predictors of satisfaction. In the Southwest the best predictor of satisfaction was the teachers ranking of written assignments as important grading criteria. Those teachers who ranked written assignments low were more satisfied than those ranking this grading method high. In the Rocky Mountains region the importance of individual laboratory activities as judged by the teacher was an indicator of satisfaction. In the Plains region after the influences of school type were removed the importance of films for instruction as ranked by the teacher predicted satisfaction. In the Southeast the age of the teacher was the best predictor of satisfaction. The older teachers were more satisfied than the younger ones.

Section IV

Summary and Discussion

The purpose of this study was to obtain information about procedures, practices, policies and conditions related to science teaching in the public secondary schools in the U.S. in 1971. This report is an attempt to identify characteristics and conditions which are related to Science Course Improvement Project Usage, teacher self-improvement activity participation, teaching practice preferences and teacher satisfaction with science teaching careers.

Use of SCIP Materials for Teaching Secondary School Science

The Science Course Improvement Project materials tended to be in use more by the large schools than by the small schools. In addition to the size of the school, the schools which were predominately senior high schools reported more use of the SCIP materials. This finding is consistent with the history of the development of the junior high SCIP materials. By 1971 there were not many junior high schools involved with the SCIP materials.

The use of SCIP materials was related to the relative enrollments in chemistry, physics and earth science. In those schools where these course enrollments were high compared to the size of the school, the SCIP materials were more often in use. This could mean that the SCIP courses were more popular with the students. It could also mean that those teachers who have built their enrollments were also the ones who selected to use SCIP materials.

The use of SCIP materials was related to Teacher Participation in NSF Institutes and to the number of credits the teachers had in science. Some teachers probably participated in NSF Institutes to get acquainted with the SCIP materials and perhaps elected to use them with their students. Other teachers may have attended the NSF Institutes to become familiar with a specific SCIP program which they had previously selected. In either case, the institute programs generally provided the participants with additional science course credits. It is also possible that those teachers which already had numerous credit hours of college science in their teaching field tended to select the SCIP materials.

There was a tendency for those schools using SCIP materials in one of the areas of science to use SCIP materials in one or more additional areas of science. The use of SCIP physical science materials was a good predictor of use of SCIP earth science materials at the junior high level. The use of SCIP materials in biology was predicted by the use of SCIP materials in physics and/or chemistry at the high school level. This may mean that school systems tend to fit into types related to use of new developments in teaching and learning. Those teachers and schools who reported the use of learning sources other than the teacher and the textbook tend to report use of more than just one additional source or media for learning. It would be of interest to determine if the use of these curriculum developments was characteristic only in the sciences or if the tendency could be found in the other content areas as well. If school systems or districts which are generally receptive to change, trying new things and using a variety of media could be identified, a study of the characteristics of these schools would be helpful. These characteristics might help us to determine the types of developments that are needed for learning and the best approaches for implementation of improvements.

Teacher Self-Improvement Activities

The participants in the NSF Institutes tended to have more college science credits than the non-participants. This is no doubt due, in part, to the selection criteria for many of the institute programs. The NSF Institute participants also increased their college credits in science as a part of the NSF programs. The participants in the NSF programs could be distinguished from the non participants in that they had more teaching experience, were older, included more men than women and were generally from the larger schools. Also when a teacher was selected as a participant for one NSF program, they tended to apply and be selected for other NSF programs.

Teaching Practice Preferences of Teachers

The teachers' rankings of the learning activities and the grading methods preferred were generally very consistent. Those teachers who favored the use of lecture and lecture-discussion teaching methods also favored the use of test scores for grading. These teachers did not consider laboratory performance to be of major importance. On the other hand, those teachers who favored laboratory activities ranked student performance in the laboratory high in importance.

The importance of science demonstrations was accompanied by high rankings for student participation in class for grading purposes. The teachers of biology did not rank demonstrations as high as the teachers of other courses.

There was an indication that those teachers who used SCIP materials were less favorable toward lecture-discussion and science demonstration learning activities and more favorable toward laboratory activities. These teachers also favored the use of grading methods other than test scores, such as laboratory performance.

In general these results suggest that the teachers using SCIP materials for teaching science valued the teaching activities and grading methods which are consistent with the intentions of these materials.

Teacher Satisfaction With Career

The science teachers were generally satisfied with their career choice. The factors which may have influenced their level of satisfaction varied broadly. The most satisfied teachers were those who had been at it the longest. This is no surprise since we would expect those who were dissatisfied to drop out.

APPENDIX A

PRINCIPAL'S QUESTIONNAIRE

THE OHIO STATE UNIVERSITY
CENTER FOR SCIENCE AND MATHEMATICS EDUCATION
244 Arps Hall, 1945 North High Street
Columbus, Ohio 43210

SURVEY OF SCIENCE TEACHING IN PUBLIC ELEMENTARY SCHOOLS
1970-1971

PRINCIPAL'S QUESTIONNAIRE

☐☐ ☐☐☐ ☐☐☐

Principal's Name: ______________________________

Name of School: ______________________________

Address of School: ______________________________
Number **Street**

____
City **County**

____
State **Zip Code**

General Instructions: This questionnaire is to be answered for an individual public elementary school, not for the school system at large. Please check over the questionnaire to get an idea of the scope of questions asked before beginning to fill out the form. Check (✓) or fill in every item that applies.

Definition: For purposes of this survey a public elementary school is defined as "an educational institution, operated on public funds, under the principal or head teacher, including any combination of grade levels from K through 8, except any upper grades under a secondary school organization." This definition excludes all private, parochial or diocesean elementary schools, correctional schools, technical or vocational schools, and special schools for the blind, and physically or mentally-handicapped children.

I. SCREENING QUESTION

Is your school a public elementary school according to the above definition? (check one)

☐ Yes (If checked, continue with Item 1 of Section II.)

☐ No (If checked, indicate below what type of school yours is and disregard the rest of the questionnaire and mail it back to us.)

Type of School ______________________________

II. SCHOOL ORGANIZATION AND SCHEDULING

1. What is the length of your regular school year? (Number of days classes are in session)

Number of Days__________

2. Give the enrollment for each grade level in your school as of Fall, 1970. Give also the total school enrollment. If you do not have students in a particular grade level, please leave the corresponding space blank.

Grade Level	Enrollment	Grade Level	Enrollment
K	________	5	________
1	________	6	________
2	________	7	________
3	________	8	________
4	________		

Total school enrollment ________

3a. Indicate the prevailing way the children are organized for science in your school.

Grade	Standard Grades	Non-Graded
K	_____	_____
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____

3b. In what grades and for what part of a school year is science taught as a definite part of the curriculum in your school?

Grade	Not Taught At All	Taught Less Than Half Year	Taught Half Year Only	Taught More Than Half Year
Kindergarten	___	___	___	___
First	___	___	___	___
Second	___	___	___	___
Third	___	___	___	___
Fourth	___	___	___	___
Fifth	___	___	___	___
Sixth	___	___	___	___
Seventh	___	___	___	___
Eighth	___	___	___	___

3c. Is your school departmentalized for teaching science at any grade level? (This means the children have a special science teacher at scheduled specified times each week) ☐ Yes ☐ No

If yes, check the grade or grades in your school in which science is departmentalized.

Grade	Departmentalized (Special Science Teacher)	Grade	Departmentalized (Special Science Teacher)
Kindergarten		Fifth	
First		Sixth	
Second		Seventh	
Third		Eighth	
Fourth			

IV. TEACHING STAFF

For Item 1 the following definitions apply:

Full-time teachers: those teachers who occupy teaching positions which require them to be on the job on school days, throughout the school year for at least the number of hours the schools in the system are in session.

Part-time teachers: those teachers who occupy teaching positions which require less than full-time service. This includes those teachers employed full-time for part of the school year, part-time for all of the school year, and part-time for part of the school year.

(Substitute teachers, defined as persons employed to teach on a day-to-day basis, temporarily replacing regularly employed teachers, are NOT considered as part-time teachers in this study.)

1. Specify the total number of regularly employed teachers (all grades) in your school.

Sex	Number Of Full-time Teachers	Number Of Part-time Teachers
Male		
Female		

2. Who teaches science to the children in your school? (Check All Boxes Which Apply)

Science Teaching In Your School	K	1	2	3	4	5	6	7	8
A. A classroom teacher with no help from an elementary science specialist or consultant	☐	☐	☐	☐	☐	☐	☐	☐	☐
B. A regular classroom teacher who teaches science classes for other teachers	☐	☐	☐	☐	☐	☐	☐	☐	☐
C. A special science teacher									
1. On the school staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. From central office staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
D. A classroom teacher with help of elementary science specialist or consultant									
1. On the school staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. From central office staff	☐	☐	☐	☐	☐	☐	☐	☐	☐
E. Educational Television Science Programs Available	☐	☐	☐	☐	☐	☐	☐	☐	☐
F. Other (Specify) ________ ________	☐	☐	☐	☐	☐	☐	☐	☐	☐

V. SCIENCE BUDGET

1. Does your school have an annual budget for the purchase of new science equipment (excluding books)? ☐ Yes ☐ No

   If yes, total amount of money spent or committed for 1970-71. $__________

2 Does your school have an annual budget for the purchase of consumable science supplies such as chemicals, batteries, balloons (excluding books)? ☐ Yes ☐ No

   If yes, total amount of money spent or committed for 1970-71. $__________

3. Are your elementary teachers who teach science permitted to purchase equipment and supplies periodically throughout the school year? ☐ Yes ☐ No

4. Have you remodeled science facilities in your school with money from the National Defense Education Act (NDEA)? ☐ Yes ☐ No

   If yes, has this been since September 1968? ☐ Yes ☐ No

5. Have you used money from the National Defense Education Act (NDEA) to purchase science equipment? ☐ Yes ☐ No

   If yes, has this been since September 1968? ☐ Yes ☐ No

6. Have you used money from the Elementary and Secondary Education Act (ESEA) to purchase science equipment? ☐ Yes ☐ No

   If yes, has this been since September 1968? ☐ Yes ☐ No

7. Equipment is defined as non-consumable, non-perishable items such as microscopes, scales, models, aquariums, etc.
   Supplies are defined as perishable or easily breakable materials that must continually be replenished such as chemicals, dry cells, glassware, electric bulbs, copper wire, etc.

   To what extent are equipment and supplies for science demonstrations and experiments available in your school? (check one only for each level)

	Completely Lacking	Inadequate	Adequate
Supplies			
K	☐	☐	☐
1-3	☐	☐	☐
4-6	☐	☐	☐
7-8	☐	☐	☐
Equipment			
K	☐	☐	☐
1-3	☐	☐	☐
4-6	☐	☐	☐
7-8	☐	☐	☐

8. What is the practice regarding the adoption of science textbook series? (check one box for each grade group in your school)

	K	1	2	3	4	5	6	7	8
No science textbook series adopted	☐	☐	☐	☐	☐	☐	☐	☐	☐
Single science textbook series adopted	☐	☐	☐	☐	☐	☐	☐	☐	☐
Two or more science series adopted	☐	☐	☐	☐	☐	☐	☐	☐	☐

9. In what type of room is science predominately taught in your school? (check one box for each grade level in your school)

Type of Room	K	1	2	3	4	5	6	7	8
A. Regular Classroom									
1. With no special facilities for science	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. With special facilities for science	☐	☐	☐	☐	☐	☐	☐	☐	☐
B. Special room to which children go for science	☐	☐	☐	☐	☐	☐	☐	☐	☐
C. Other (specify) ____________________ ____________________	☐	☐	☐	☐	☐	☐	☐	☐	☐

VI. COURSE OFFERINGS

1. Please specify the total number of children in your school by grade level(s) which use any Science Course Improvement Project materials during the 1970-71 school year. If particular course materials are not used in your school, please leave the corresponding spaces blank.

Science Course Improvement Project	Number of Children by Grade Level								
	K	1	2	3	4	5	6	7	8
SCIS-Science Curriculum Improvement Study (Rand McNally)									
ESS-Elementary Science Study (McGraw-Hill)									

1. (Continued)

Science Course Improvement Project	Number of Children By Grade Levels								
	K	1	2	3	4	5	6	7	8
AAAS-Science-A Process Approach (Xerox)									
COPES-Conceptually Oriented Program for Elementary Science (New York University)									
CSLS-Child Structured Learning In Science (Florida State University)									
IPS-Introductory Physical Science (Prentice-Hall)									
ISCS-Intermediate Science Curriculum Study (Silver Burdett)									
ESCP-Earth Science Curriculum Project (Houghton-Mifflin)									
ESSP-Elementary School Science Project (Astronomy) (University of Illinois)									
MINNEMAST-Minnesota Mathematics and Science Teaching Project									
IDP-Inquiry Development Program (Science Research Associates)									
TSM-Time-Space-Matter (McGraw-Hill)									
Other (Specify) ________________ ________________									

2a. Do you use definite procedures in your school for identifying children with special interests, aptitudes or talent in any area of your curriculum?

☐ Yes ☐ No

2b. Do you use definite procedures for identifying children with special interest in science? ☐ Yes ☐ No

3a. Is Environmental and/or Conservation Science taught in your school? ☐ Yes ☐ No

If yes, answer 3b. and 3c.
If no, go to Item 4a.

3b. Is Environmental and/or Conservation Science taught as a separate subject or in relation to other subjects? (Check in the appropriate space for each grade level)

	Grade Level								
	K	1	2	3	4	5	6	7	8
Taught separately	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with social studies	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects not including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (Specify) ____________________ ____________________	☐	☐	☐	☐	☐	☐	☐	☐	☐

3c. Specify any facilities (such as an outdoor education laboratory, school farm, school forest...) that are available for teaching environmental and/or conservation science in your school.

____

____

____

4a. Is health taught in your school primarily as a separate subject or in relation to other subjects?

	K	1	2	3	4	5	6	7	8
Taught separately	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with physical education	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects not including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (Specify) ____________________ ____________________	☐	☐	☐	☐	☐	☐	☐	☐	☐

4b. Is narcotics or drug abuse education taught in your school? ☐ Yes ☐ No

If yes, is it taught primarily as a separate subject or in relation to other subjects?

	K	1	2	3	4	5	6	7	8
Taught separately	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with health	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with physical education	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Taught with two or more subjects not including science	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify) ________________ ________________	☐	☐	☐	☐	☐	☐	☐	☐	☐

VII. INSERVICE EDUCATION

1a. In addition to assistance from the principal, is there other consultant or supervisory help in teaching science available from within the school system?

☐ Yes ☐ No

If yes, check items below which apply.

- ☐ General elementary supervisor with only general knowledge of science
- ☐ General elementary supervisor with special competence in elementary science
- ☐ Elementary science consultant, supervisor, or specialist
- ☐ Classroom teacher with special training or competence in science
- ☐ High school science teacher
- ☐ Other (Specify)

____

____

If you answered "No" to question 1a, DO NOT answer THIS question.

1b. If consultant help in science is available, to what extent do teachers make use of it? (Consider all types checked in question 1a and check only ONE box for each grade group in your school)

Grade	Rarely or Never (less than once a month)	Occasionally (about once a month)	Very Often (at least once a week)
K	☐	☐	☐
1	☐	☐	☐
2	☐	☐	☐
3	☐	☐	☐
4	☐	☐	☐
5	☐	☐	☐
6	☐	☐	☐
7	☐	☐	☐
8	☐	☐	☐

If you answered "No" to question 1a, DO NOT answer THIS question.

1c. If consultant help is available in your school, to what extent is each of the following ways of working used at each grade group level? Complete every box for grade groups in your school by writing in one of the numbers of the following code:

1 - Rarely or Never Used 2 - Used Occasionally 3 - Used Very Often

Consultant's Ways of Working	Grade Group K	1-3	4-6	7-8
Planning or consulting with teachers				
Teaching science lessons within classrooms				
Introducing science units				
Providing materials				
Helping plan field trips				
Evaluation of science teaching				
Demonstration teaching before teacher groups				
Organizing or directing teacher workshops				
Working with small groups of children				
Other (Specify) ____________				

2. What are the opportunities teachers in your school have for in-service science education? (check as many boxes as apply for each function)

	Sponsorship				
In-Service Science Education Activity	Local School Level	School System Level	State Level	College Sponsored	Any Other Sponsorship (Specify)
Teachers meetings					
Curriculum development and revision					
Elementary science courses					
Elementary science workshops					
Visitations and demonstration teaching					
Television and radio programs					
Other in-service science education activities (Specify) ________ ________ ________					

END OF PRINCIPAL'S QUESTIONNAIRE

THANK YOU FOR YOUR COOPERATION

APPENDIX B

SCIENCE TEACHER QUESTIONNAIRE

THE OHIO STATE UNIVERSITY
CENTER FOR SCIENCE AND MATHEMATICS EDUCATION
244 Arps Hall, 1945 North High Street
Columbus, Ohio 43210

SURVEY OF SCIENCE TEACHING IN PUBLIC SECONDARY SCHOOLS
1970-71

SCIENCE TEACHER QUESTIONNAIRE

☐☐ ☐☐☐ ☐☐☐

Name of School: ____________________

Address of School: ____________________
Number Street

____
City County

____
State Zip Code

General Instructions:

This questionnaire is to be answered by the individual secondary school science teacher. Please check over the questionnaire to get an idea of the scope of questions asked before beginning to fill out the form. Check (√) or fill every item that applies.

Definition:

For purposes of this survey, a secondary school science teacher is defined as "a teacher who teaches at least one science course or subject in any grade level or combination of grade levels from 7 through 12, in any school designated as a public secondary school."

I. SCHOOL ORGANIZATION

Check the grade levels that are included in your school.

K-12 _____
1-12 _____
7-12 _____
8-12 _____
9-12 _____
10-12 _____
7-8 _____
7-9 _____
Other _____
(specify)

II. TEACHER CHARACTERISTICS

Check (√) or fill in the blank.

1. Age in years _____
2. Sex: male _____ female _____

3. **Please check the degree(s) you now hold, and specify the major and minor subject matter fields of the degree(s).**

Degree(s) Held		Subject Matter Fields Major	Minor(s)	
B.S. or B.A.	_____	__________	_____	_____
M.S. or M.A.	_____	__________	_____	_____
Ed.D.	_____	__________	_____	_____
Ph.D.	_____	__________	_____	_____
Specialist	_____	__________	_____	_____
Non-degree	_____	__________	_____	_____
Other (specify)	__	__ __________	_____	_____

4. **Are you now working on a formal degree program? Yes _____ No ____**

If yes, what degree ? _____

Major subject matter field ____________________

Minor subject matter field(s)________________ ________________

5. **Please specify the number of credits you have in the following areas in either quarter hours or semester hours.**

Undergraduate Work	Quarter Hours	Semester Hours
Biological Sciences	_______	_______
Physical Sciences	_______	_______
Earth Science	_______	_______
Mathematics	_______	_______
Science Teaching Methods	_______	_______
Student Teaching in Science	_______	_______
Graduate Work		
Biological Sciences	_______	_______
Physical Sciences	_______	_______
Earth Science	_______	_______
Mathematics	_______	_______
Science Teaching Methods or Science Education	_______	_______

6. If you have attended any sponsored In-service Institutes during the period 1960-70, please circle the year(s) in which you attended the institute(s). For example, if you attended a National Science Foundation (N.S.F.) Academic Year Institute in 1965-66, circle "65". If you have attended an In-service Institute during 1969-70, circle "69".

Kind of Institute											
N.S.F. Academic Year	60	61	62	63	64	65	66	67	68	69	70
N.S.F. In-service	60	61	62	63	64	65	66	67	68	69	70
N.S.F. Summer	60	61	62	63	64	65	66	67	68	69	70
N.S.F. Research	60	61	62	63	64	65	66	67	68	69	70
Other Sponsored Institutes (specify)											
______________	60	61	62	63	64	65	66	67	68	69	70
______________	60	61	62	63	64	65	66	67	68	69	70

7. If you teach or have taught one or more of the Science Course Improvement Projects (eg., IPS, ISCS, ESCP, SSSP, IME, BSCS, CHEM Study, CBA, PSSC, HPP, Portland Project ...), since September 1968, please supply the following information about each project.

Science Course Improvement Project	Attendance at Workshop or Institute Yes	Attendance at Workshop or Institute No	Length of Workshop or Institute

The following definitions apply for item 8 below:

Full-time teachers: those teachers who occupy teaching positions which require them to be on the job on school days, throughout the school year for at least the number of hours the schools in the system are in session.

Part-time teachers: those teachers who occupy teaching positions which require less than full-day service.

Substitute teachers: those persons employed to teach on a day-to-day basis, temporarily replacing regularly employed teachers. They are not considered as part-time teachers in this study.

8. On what basis are you now employed by the school system ?

Full-time ______ As a substitute ______

Part-time ______ Other (specify) ____________

9a) Number of years of teaching experience in an elementary school ______

b) Number of years of teaching experience in a secondary school (Include the present school year.) ______

c) Total number of years of teaching experience (Include the present school year.) ______

d) Number of years you have taught science in a secondary school (Include the present school year.) ______

e) Number of years at present school system or district (Include the present school year.)

III. TEACHING LOAD

Please list below all subjects or courses you are teaching, and fill in the related information.

Example

A teacher who teaches two sections of 10th grade BSCS Biology - Blue Version with 20 students in one section and 28 students in the other section would fill in the information as follows:

BSCS Blue Version	10	2	24

Subject/Course	Grade Level(s)	No. of Sections or Classes	Average Class Size

IV. SPECIAL SCIENCE FACILITIES AND AUDIO-VISUAL AIDS

1. Check the special science facility or facilities that is/are available for your use in teaching science in your school. How much use do you make of each facility that is available ?

Special Science Facility	Availability		Usage		
	Yes	No	Often (at least once a week)	Occasionally (about once a month)	Rarely (less than once a month)
Auto-tutorial laboratory					
Closed circuit television					
Computer terminal(s)					
Greenhouse					
Ham radio station					
Land laboratory					
Nature trail(s)					
Observatory					
Planetarium					
Science darkroom					
Ventilated animal house					
Weather station					
Other (specify) ______					

2. Check the audio-visual aids that are available to you in teaching science. How much use do you make of each kind of aid that is available ?

Audio-visual Aid	Availability		Usage		
	Yes	No	Often (at least once a week)	Occasionally (about once a month)	Rarely (less than once a month)
Motion picture projector					
Filmloop projector					
Slide projector					
Overhead projector					
Opaque projector					
Micro-projector					
Phonograph					
Tape-recorder					
Television					
Commercial models (eg.eye ear, molecular models...)					
Commercial charts					

V. SCIENCE TEACHING

Special Instruction

Items 1,2,3,4 and 5 below have been designed to provide information specific to one science class. If you teach only one class of science, respond to these same items with respect to that class. You may skip directly to item 1 below. If you teach more than one science class, please read the following before you begin item 1.

In order to ensure that the secondary school science classes in this survey constitute a random sample, we request your cooperation in selecting one of your science classes, about which we hope to obtain specific information regarding the science teaching practices.

The method of selecting this science class from all your science classes is outlined below. In selecting a science class for the information needed in Section V, Items 1-5, of the questionnaire, treat each group of students or unit as a separate class.

A. Order your science classes in numerical order, starting with "1" for the first science class that you teach each day, "2" for your second science class, and so on, ending with your last science class for the day.

B. Please select one of the science classes according to the following selection criteria:

Science Class Selection Numbers

04
03
02
01

a) If the total number of science classes that you teach is greater than or equal to 4, select the 4th science class.

b) If the total number of science classes that you teach is 3, select the 3rd science class.

c) If the total number of science classes that you teach is 2, select the 2nd science class.

V. SCIENCE TEACHING (Continued)

1. Title of science course ______________________________

Grade level(s) ________ Class size ________

2. Please check the kind of room that you use to conduct the science class specified above.

Laboratory or special science room ______
Classroom with portable science kits ______
Classroom with no science facilities or kits ______
Other (specify) ______

____

3a) Please specify the kind of curriculum materials and/or textbooks that you use for the science class specified above. Check as many as applies.

Single textbook ______
Separate laboratory manual ______
Single textbook including laboratory manual ______
Multiple textbooks ______
Multiple textbooks including laboratory manual ______
Locally-prepared materials ______
Other (specify) ______

____

b) Please supply the following information about the textbook(s) and/or curriculum materials used for the science class specified above. If space is insufficient, please continue on the back of this sheet or attach a separate list.

Title	Publisher	Publication Date

4. With respect to the science class specified above, rank the three learning activities that you use most often. Use "1" for the most often used activity, "2" for the next most often, and "3" for the third most often used activity. Mark all other activities which you use with a check (✓).

Lecture ______
Lecture-discussion ______
Small group discussion ______
Science demonstrations ______
Instructional films ______
Independent study ______
Others (specify) ______

____
____

Individual laboratory activity ______
Group laboratory activity ______
In-class written assignments ______
Excursions or field studies ______
Programed instruction ______
Auto-tutorial instruction ______
Televised instruction ______

5. With respect to the science class specified above, rank the three grading methods that you use the most often. Use "1" for the most often used grading method, "2" for the next most often, and "3" for the third most often used grading method. If you do not use a particular grading method, please leave the corresponding space blank.

Grading Method	Rank
Test scores	______
Written assignments	______
Student participation in class discussion	______
Student performance in laboratory activity	______
Student performance in science projects	______
Student interest in science	______
Other (specify) ____________________	______

VI. MISCELLANEOUS

1. Evaluate the importance of the following factors to you in obtaining and maintaining a high quality science program in your school.

Factors	Very Important 1	2	3	4	Not Important 5
Innovative science programs	______	______	______	______	______
Administrative support	______	______	______	______	______
Science facilities	______	______	______	______	______
Teacher's salary	______	______	______	______	______

1. (Continued)

Factors	Very Important 1	2	3	4	Not Important 5
In-service education					
Cooperative staff					
Small classes					
Number of different subject preparations					
Lighter teaching loads					
Others (specify)					
____________					
____________					

2. How satisfied are you with teaching science as a career ?
Mark one of the spaces below with a check (✓).

______	______	______	______	______
Very satisfied	Satisfied	Neutral	Dissatisfied	Very

END OF THE SCIENCE TEACHER QUESTIONNAIRE

THANK YOU FOR YOUR COOPERATION

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